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FORTHCOMING ISSUE

The next number of the Review will be a Special Number and entirely devoted to the theme

INTERNATIONAL PROJECT FOR THE EVALUATION OF EDUCATIONAL ACHIEVEMENT (IEA)

The editor of the number is T. Neville Postlethwaite, coordinator of the IEA, c/o Unesco Institute for Education, Hamburg.

Among the contributions will be:

D. A. Pidgeon, England — Technical Problems of International Cooperative Research Projects

R. Wolf, USA	The Analysis of Item Data for the IEA Mathematics Tests
G. F. Peaker, England	The International Study of Achievement in Mathematics. A Few Examples of Points of Special Interest to Teachers
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F. Hotyat, Belgium	La valeur l'étude de l'*IEA* sur le rendement en mathématique pour la politique éducative: La Belgique
H. Thomas, Bundesrepubliek Deutschland	Die Bedeutung der *IEA*-Untersuchung über Mathematikunterricht für die Schulpolitik: Die Bundesrepublik Deutschland

MARTIN-BUBER-BRIEFE GESUCHT

Das Martin-Buber-Archiv der Jüdischen National- und Universitätsbibliothek in Jerusalem und das Martin-Buber-Institut der Universität zu Köln bitten alle Besitzer von Briefen Martin Bubers in den deutschsprachigen Ländern und in der CSSR, dem Kölner Institut (D – 5 Köln, Kerpener Str. 4) Kopien der Briefe zur Ergänzung des Archivs und zur Vorbereitung einer Briefausgabe zu überlassen.

LEHRPLANANALYSE
ALS TEIL DER CURRICULUMFORSCHUNG

von KARL FREY, Fribourg

I. *Allgemeine Voraussetzungen der Lehrplananalyse: Ein Erfahrungsbericht*

Die Curriculum- oder Lehrplanforschung umfaßt alle jene Untersuchungen, welche die Konstruktion oder Verbesserung der Lehrpläne vorbereiten. Die Lehrplan- und Unterrichtsanalyse bilden einen Teil der Curriculumforschung und werden im ersten Stadium der Erstellung eines neuen Lehrplans (Curriculums) durchgeführt. Sie vermitteln eine Grundlagendokumentation und Strukturanalyse der gegenwärtigen Bildung unter prospektivem Charakter.1)

Es geht also bereits um Planung, wobei aber Information und Inventaraufnahme den hauptsächlichen Arbeitsaufwand beanspruchen. Grundsätzlich liegen der Lehrplananalyse die gegenwärtig gültigen Lehrpläne, Schulreglemente und Erziehungsgesetze zugrunde. Wo solche nicht gegeben sind, hat sich die Untersuchung auf den konkreten Unterricht zu stützen. Sie wird dann zur Unterrichtsanalyse. Das geschieht über Unterlagen wie Klassenbücher, Jahresberichte, Prüfungsaufgaben, Tests, Unterrichtswerke und Fragebogen (Inventarbogen).

1. Die Grundfunktionen der Lehrplananalyse

Die Lehrplananalyse entspricht 1) einem bildungspolitischen Bedürfnis und 2) einer erziehungswissenschaftlichen Realität.

Die politische Notwendigkeit ergibt sich aus der Tatsache, daß laufend neue Lehrpläne mit rechtlich verbindlichem Status zum Einsatz kommen. Die Lehrplanautoren kennen oft die praktizierten und projektierten Unterrichtsformen des Nachbargebietes nicht. Sie können die Verhältnisse in vielen Fällen gar nicht kennen, weil die nationale und internationale Dokumentation noch unvollständig ist, und weil die Lehrplanautoren ihre Aufgabe nicht selten im Nebenamt erledigen müssen.

Das führt zu Lehrplanentscheidungen, die trotz der Postulate der Koordination völlig divergierende Ausbildungsformen nach sich ziehen. Die Schulreformen können unter solchen Umständen nicht durch die Forschung fundiert werden, wie Anweiler in einem Überblick über die europäischen Reformen feststellt.2)

Die Lehrplananalyse füllt diese Lücke insofern, als sie das *Bestehende* in Hinsicht auf die Reform oder die Neukonstruktion aufarbeitet. Zudem zeigt sie jene Orte auf, an denen die speziellen Untersuchungen anzulegen sind. Die diagnostische Aufgabe ist lösbar, weil die Analyse jene Kriterien benutzt, die eine "umfassende" Lehrplanforschung repräsentieren. So wird nach den Funktionen, der didaktischen Struktur, der Methodik, der Lernökonomie, der Wissenschaftlichkeit, dem sachlogischen Aufbau des Unterrichts gefragt.

Damit ist der andere Grund für die Lehrplananalyse, nämlich die "erziehungswissenschaftliche Realität", angeschnitten. Die Lehrplanreformen unterstehen der soziologischen Gesetzmäßigkeit der "*generativen Strukturen*". In der gegenwärtigen Situation handelt es sich um einen Sonderfall, wenn ein Lehrplan völlig neu entworfen werden kann. Vielmehr sind die Forschungen um schon bestehende Lehrpläne zu gruppieren. Das Modell der Curriculumforschung, welches Robinsohn umrissen hat, wird sich im Konkreten meistens an bestehende Lehrpläne anpassen bzw. von ihnen ausgehen.[3]) Es hieße, ein entscheidendes "experimentelles Stadium" überspringen[4]), wenn die aktuelle Unterrichtspraxis nicht in die Planungsvorbereitung einbezogen würde. Denn die gegenwärtige Sachlage ist für die Curriculumforschung sowohl im Entdeckungs- wie im Berechtigungszusammenhang (*context of discovery; context of justification*) höchste Realität und somit Erfahrungsgrundlage.

2. *Entwicklung und bisherige Anwendung der Lehrplananalyse*

Erste Untersuchung

In der Schweiz erstreben zahlreiche politische Gruppen und private Interessenverbände die Vereinheitlichung und Neugestaltung des Schulwesens unter prinzipieller Wahrung des föderalistischen Staatsaufbaues, d.h. der Autonomie der 25 Kantone in Fragen des Erziehungs- und Bildungswesens. Um für die Koordinationsarbeiten eine Grundlagendokumentation zu schaffen und erste Ansätze für eine spezifische Vorbereitung der neuen *Lehrpläne* zu liefern, ist 1966/67 eine Analyse der Lehrpläne der Real-, Sekundar- und Bezirksschulen durchgeführt worden.[5]) Die Ausgangsbasis der Untersuchung bildeten 24 kantonale Lehrpläne. Die drei "Schultypen", oder besser Schulbezeichnungen, erstrecken sich auf das 5. bis 9. Schuljahr und haben die Funktion, zur Berufslehre oder zu den oberen Klassen des Gymnasiums hinzuführen. Parallel dazu verlaufen die Volksschuloberstufe und in gewissen Kantonen die unteren Klassen des Gymnasiums.

Bei der gesamten Analyse behielt die Frage der *Koordination* den Vorrang. Die Planung selber wurde der Abklärung der Koordinationsmöglichkeiten untergeordnet. Das dominierende Betrachtungskriterium richtete sich auf die Gemeinsamkeiten und Variationen im Unterrichtsgefüge. Der Vergleich vollzog sich zuerst fächerweise, um am Schluß in der Zusammenfassung die einzelnen Schultypen, Aufbauformen, Bildungsziele, Fächerreihen und Unterrichtsinhalte zu interpretieren.

Wissenschaftsmethodisch handelte es sich bei dieser Untersuchung vor allem um einen *Vergleich*, der in der Nähe der "Geschichte der Pädagogik" einzuordnen ist, denn vordergründig war "die gegenständliche Transposition in einen anderen historischen oder geographischen Bereich"[6]. Die "prozessual-operative" Ausrichtung der Bildungsplanung[7]) verminderte sich zugunsten der Übertragung der Lehrplandaten in einen vorhandenen Zusammenhang, in diesem Falle die gesamtschweizerische Situation.

Die erste Untersuchung leistete einen Beitrag für die Entwicklung der *Technik der Analyse*. Methodisches Ziel war "eine möglichst exakte Erhellung von pädagogischen Teilbereichen"[8]) mit Hilfe einer Klassifikation der Lehrplaninhalte.

Zweite Untersuchung

Sie betrifft die schweizerische Volksschullehrerbildung.[9]) Die Aufgabe besteht darin, die 52 Lehrerbildungsanstalten zum Zwecke der Revision in ihren Strukturen zu analysieren. Die Arbeiten, welche Ende 1967 begonnen haben, konzentrieren sich auf zwei Schwerpunkte: die allgemeinen Strukturen der *Lehrerbildung* und die konkrete Ausbildung der künftigen Lehrer in den einzelnen Disziplinen. Zu den Strukturen zählen die rechtlichen Grundlagen der Institutionen, die äußere Organisation, die Ausbildungsdauer, die Vorbildung der Lehramtskandidaten, das Aufnahmeverfahren, die Organisation des Unterrichtes, insbesondere die Anordnung des Fächerkanons, die Hinführung zur Schulpraxis, die persönlichkeitsbildenden Faktoren, die Schlußprüfungen. Die Analyse des konkreten Unterrichts umfaßt alle einzelnen Fächer, Arbeitsgemeinschaften, Fachschaften, Diplom- oder Examensarbeiten, Praktika, Prüfungsanforderungen.

Die zu untersuchenden Institutionen haben eine sehr heterogene Gestalt. Auf der einen Seite stehen jene mit einem mehrsemestrigen Hochschulstudium und vorausgesetzter Hochschulreife, auf der andern jene mit einer Form, die dem klassischen deutschen Lehrerseminar (Präparanden-Anstalten) ähnlich ist. Zwischen den beiden Extremen gibt es zahlreiche Kompromißlösungen. Nur ungefähr ein Drittel aller 52 Institutionen besitzt einen Lehrplan.

Um die Vielfalt unter denselben Analysekriterien zu erfassen, mußte ein Inventarbogen in Form eines Frageschemas von 130 Seiten konstruiert werden, der an die Direktoren und Dozenten der Lehrerbildungsanstalten ging. Als Originalmaterial für die Erhebung dienen Schulreglemente, Lehrpläne, Jahresberichte, Stundentafeln, Inventare über die einzelnen Fächer sowie über den Aufbau der Anstalt und persönliche Informationen.

Im Gegensatz zur ersten Untersuchung haben nicht die Fragen der Koordination, sondern die der *Planung* und *Neugestaltung* die Priorität. Wenn hier noch die Rede von Vergleichender Erziehungswissenschaft sein soll, so im Sinne der "Prospektiven Vergleichenden Erziehungswissenschaft".10) Die Funktionen, welche der Lehrplananalyse aus der prospektiven Ausrichtung erwachsen, sollen im folgenden Abschnitt kurz umrissen werden.

3. Besondere Aufgaben der Lehrplananalyse

Grundlagendokumentation und Strukturanalyse mit prospektivem Charakter

Das Verhältnis der Ausdrücke "prospektiv" und "Dokumentation" bildet methodisch und bildungstheoretisch ein Problem. Mag es doch nach verschiedenen bisherigen Wissenschaftstheorien so aussehen, als ob es zwei separate wissenschaftliche Methoden gäbe, die entweder zur Realitätsgewinnung und Bestandsaufnahme, oder aber zu Spekulation und idealisierender Reflexion hinleiten. In der pädagogischen Theorie, die auf Handlung, nämlich die erzieherische Aktion angelegt ist, laufen beide seit jeher gewissermaßen ineinander oder miteinander.

Die Position der Lehrplananalyse zwischen Rückschau und Voraussicht soll aus einem Zitat Wenigers deutlich werden, der sagt, es verbiete sich, "den Satz Friedrich Paulsens, daß die Schule der Kultur immer nachfolge, so einfach hinzunehmen",11) wenn es auch mit Einschränkung wahr ist, daß sich die "Konstitution der Schule als einer Anstalt der geschichtlichen Überlieferung, als Ort der Kulturtradierung" 12) eingefahren hat. Man muß mit Robinsohn formulieren: die Lehrplananalyse ist wie die gesamte Curriculumforschung eine "Analyse in den Grenzen der Kulturtradition".13)

Formulierung der bisherigen und künftigen Gesamtkonzeption

Um der politischen Wirklichkeit und der erziehungswissenschaftlichen Methodik Genüge zu tun, benötigt die Inventaraufnahme arbeitsmäßig den größten Raum. Sie kommt ohne wertenden Kommentar zur Darstellung und ermöglicht damit, die Konzeption der bisherigen Ordnung herauszulösen. Die klar vorliegende Konzeption der alten Lehrpläne verhindert, daß nur Scheinreformen durchgeführt werden, die unter veränderter äußerer Bezeichnung das herkömmliche System konservieren. Die offenkundige Konzeption der alten Verhältnisse zwingt die Autoren der neuen Lehrpläne, eine eigene Konzeption abzufassen oder sich mit der bestehenden zu identifizieren.

Die alte Gesamtkonzeption wird dann nach den formalen Idealen einer heutigen durchleuchtet. Man prüft also, ob und wieweit sie jene Fragestellungen beinhaltet, die in der aktuellen Situation auftreten. Dadurch erhält die weiterführende Einzelforschung für den künftigen Lehrplan Anstöße und Ansätze für Projekte. Aus der möglichen Differenz der alten und heutigen "idealen" Konzeption lassen sich Kriterien ableiten, nach denen die Gesamtkonzeption aufzubauen ist.14)

Planung der "Möglichkeit" von Reformen

Die Lehrplananalyse fungiert als Hilfsmittel zur *Abklärung* der Erneuerungs*möglichkeiten*. Erst aufgrund der genauen Kenntnis der bestehenden Verhältnisse ist das Ausmaß der Erneuerungsvorschläge kritisch zu sichten. Es handelt sich um ein Vorgehen, das in der Wirtschaft zur Selbstverständlichkeit gehört, bei den Bildungsreformen aber noch kaum Beachtung erhält.

Die Abschätzung der Reformmöglichkeiten bezieht sich besonders auf das Lehrpersonal. Es werden neue Schulformen und -stufen eingerichtet, ohne vorausgehend oder parallel dazu die Abänderung der Lehrerbildung an die Hand zu nehmen. Bekannt sind die Probleme dieser Art von der Einführung des *Collège d'Enseignement Secondaire* 1963 in Frankreich, vom allgemeinen Beginn der *Comprehensive School* 1965 in England, vom Einsatz der Abschlußklassen in der Schweiz oder der Anhebung der Lehrerseminarien (Akademien) in der Bundesrepublik Deutschland und der Schweiz auf die Ebene von (wissenschaftlichen) Hochschulen. Die Lehrplan- und Unterrichtsanalyse gestattet die Prognose über die nötige Umwandlung der Lehrerbildung. Ähnliches gilt für die Unterrichtsmittel.

Bestimmung der Prioritäten

Sie ergibt sich zum Teil aus dem Vergleich der verschiedenen Schultypen, zum Teil aus dem Vergleich der einzelnen unterrichtspraktischen Verwirklichungen des Lehrplans. Im übrigen zeigen sich die Prioritäten bei der Gegenüberstellung des gegenwärtigen Unterrichtes mit der Gesamtkonzeption des neu zu planenden Curriculums.

Fixierung der Ziele im künftigen Schulsystem

Vexliard sieht im Anschluß an Rosselló die Bedeutung vergleichender Analysen im Beitrag "zur Fixierung der Ziele (*objectifs*), die anzustreben sind".15) Sie erlauben, "den relativen Wert verschiedener vorgeschlagener oder experimentierter Modellösungen von einzelnen Ländern für die

Behebung eines ganz bestimmten Problems klarzulegen".16) Sie dienen also der Aussonderung von ungeeigneten Lösungen. Andererseits kann die Analyse fremder Lehrpläne zufällig zur Entdeckung eines Schulsystems führen, das für die eigene Situation paßt. Dieses Vorgehen ist in den letzten Jahren auf dem internationalen Niveau und innerhalb von Ländern mit föderalistischer Struktur oft zu beobachten. In der Schweiz hat sich nach Ansicht einiger Fachleute in den letzten Jahren die Gefahr herausgebildet, vor lauter politischen Kompromißlösungen die Planung zu vergessen.17)

Die Lehrplananalyse sollte im Prinzip nicht die unmittelbare Übernahme vorbereiten, da sie nur das erste Stadium einer den endgültigen Entscheid vorbereitenden Curriculumforschung darstellt.

Funktionaler Charakter der Lehrplananalyse

Allen Aufgaben der Lehrplananalyse gemeinsam ist der *funktionale* Grundtenor und der propädeutische Zug der Resultate. Vergleichende Analysen sind Anlegestellen für weitere Forschung. Sie setzen Gewichtungen, vermitteln Einblick in die Entwicklungstendenzen und arbeiten die einzelnen Strukturen heraus. Da sie von einem möglichst integralen Modell der Curriculumforschung ausgehen, wirken sie normativ auf die Betrachtung der Lehrpläne und eröffnen die Perspektiven für die vielfältigen Faktoren eines zusammenhängenden Curriculums.

Die Lehrplananalyse ist insofern funktional, als sie auf die Zukunft hinweist. Das Datenmaterial kommt zwar für die Dokumentation und den ersten Vergleich in seinem ursprünglichen historischen Rahmen zum Aufweis, doch die Interpretation erfolgt im Blick auf die Revision des Curriculums. Die Analysekriterien, die Teil II (vgl. S. 11) beinhaltet, werden näher erläutern, welche Resultate die funktionale Auswertung erbringt.

4. Allgemeines Vorgehen

Die Lehrplananalyse möchte folgenden methodischen Prinzipien genügen:

- *Gewinnung wirklichkeitsentsprechender Ergebnisse.* Das bedeutet für den Vergleich der heterogenen Grundlagen, daß ein einheitliches Bezugssystem zu finden ist, das auf die verschiedenen Schultypen und Fächer paßt.
- *Zwischenmenschliche Überprüfbarkeit der Resultate.* Deshalb muß der Weg zum Endbefund nachvollziehbar sein. Die verschiedenen Elemente, die zum Schlußurteil beitragen, sollten erkenntlich sein.
- *Weitere Verwendungsmöglichkeit der erarbeiteten Daten.* Sie ist besonders bei der Lehrplananalyse von weittragender Bedeutung, da diese nur die erste Etappe der Curriculumforschung markiert.

Lehrplan- und Unterrichtsanalyse nehmen ihren Ausgang bei den Fächern, eventuell bei Arbeitsgemeinschaften, also bei den Objektbereichen des Unterrichts. Jeder einzelne Objektbereich (Fach) wird in mehrere *Untersuchungseinheiten* gegliedert, z.B. die Funktionen des Faches, die behandelten Inhalte des Faches, die im Fach zur Anwendung gelangenden Methoden. Alle Untersuchungseinheiten werden in 4 Phasen behandelt.

1. Phase: Konstruktion der Inhaltsklassifikation

Die Untersuchungseinheit "Funktionen des Faches" soll bei der Veranschaulichung des Vorgehens als Beispiel dienen. In der ersten Lektüre der Unterlagen werden sämtliche angezeigten Funktionen ohne systematisierenden Gesichtspunkt gesammelt. In einem zweiten Gang werden die aufgefundenen Funktionen geordnet und in mehrere Komplexe zusammengefaßt. Im dritten Gang werden die einzelnen Komplexe in neue übergeordnete Einheiten oder Klassen übertragen. Meistens ist zu diesem Zweck ein neuer Begriff zu bilden. Anschließend beginnt die Abklärung, ob und in welcher Form die einzelnen Klassen bei den einzelnen Lehrplänen besetzt sind.18)

2. Phase: Darstellung der Häufigkeitsverteilung

Es ist wichtig, das Datenmaterial darzustellen, bevor die Wertung und weiterführende Interpretation beginnt. Dieses Vorgehen erhöht die Objektivität. Die Ergebnisse der Klassifikation und Auszählung werden unverändert für die Weiterverwendung aufbewahrt. Zudem entsteht ein Reservoir von Anregungen, das sich aus allen Unterlagen angesammelt hat. Für die Darstellung eignen sich Übersichtstabellen mit einem ausführlichen Textteil. Im letzteren kommt also zur Sprache, wie häufig, bei welchen Lehrplänen und (eventuell) in welcher besonderen Ausprägung die einzelnen Inhaltsklassen auftreten.

3. Phase: Absolute und relationale Interpretation des dargestellten Datenmaterials

Die Interpretation erfolgt nach der Darstellung der Häufigkeitsverteilung, und zwar zuerst absolut, d.h. jede Inhaltsklasse für sich (in Bezug auf die einzelnen Lehrpläne), und anschließend relational, d.h. zwei oder mehr Inhaltsklassen gemeinsam und wiederum in Bezug auf die einzelnen Lehrpläne. Dadurch kristallisieren sich die Schwerpunkte heraus. Es bildet sich vielleicht eine Hierarchie der Inhaltsklassen. Die Randphänomene heben sich als solche heraus. Hier läßt sich auch die relative Bedeutung des Faches innerhalb des Kanons zum ersten Mal ermessen. (Das zweite Mal ist es in der Gesamtinterpretation nach der Behandlung der einzelnen Fächer möglich.) Bei der Interpretation wird entscheidend das Anliegen der Reform des Lehrplans eingebracht. Die politischen Postulate, die Forschungsergebnisse der verschiedenen Wissenschaften stellen sich den bisherigen Verhältnissen gegenüber. Aus dieser Konfrontation erwächst die letzte Phase:

4. Phase: Satzhafte Zusammenfassung und Entwürfe

Die Lehrplananalyse hat die Vorbereitung des künftigen Curriculums zum Ziel. Deshalb schließt die Behandlung jeder Untersuchungseinheit mit einer kurzen Zusammenfassung, die auch die Ergebnisse der tabellarischen Resultate berücksichtigt. Zum Aufweis kommen ferner die im bisherigen Lehrplan fehlenden Momente, die Ansätze für Forschungsprojekte, die Vorschläge für Schwerpunktbildung und brauchbare Elemente für eine künftige Gesamtkonzeption.

5. *Strukturschema der Analysekriterien*

Jedes Fach wird in die nachfolgenden Untersuchungseinheiten gegliedert. Für die Analyse fungieren sie als Kriterien. Im anschließenden Teil II "Modell der Lehrplananalyse" werden die Kriterien einzeln ausgefaltet.

1. Fachbezeichnung und Stellung in der Fächerreihe
2. Begründung und Funktionsbereiche
   - Begründung
   - Funktionsbereiche
     - Funktionen im Bereich der Wissenschaft
     - Funktionen im Bereich des Berufes
     - Funktionen im Bereich der Kultur
     - Funktionen im Bereich der Persönlichkeit
3. Inhalte und Inhaltsstrukturen
   - Behandelte Inhalte
   - Inhaltsverteilung auf die einzelnen Schuljahre
   - Inhaltsstrukturen
   - Lehrbücher
4. Unterrichtsorganisation
   - Methoden
     - Unterrichtsformen
     - Fachübergreifende Anlage
     - Lernkontrollen
   - Unterrichtsmittel
5. Fachlektionen pro Woche
6. Folgerungen für die Planung und Unterrichtsreform

II Modell der Lehrplananalyse

1. Fachbezeichnung und Stellung in der Fächerreihe

Die Funktion dieses Analysekriteriums liegt in zwei Bereichen: – Es ermöglicht die sachgerechte Verständigung trotz der divergierenden Fachbezeichnungen. – Die Fächer werden im Kanon lokalisiert, Fachüberschneidungen klargelegt und die allgemeinen Bedeutungen im Lehrplan umrissen.

Bislang ist die Diskussion über die Realien, die Naturkunde, die Naturlehre erst denkbar gewesen, nachdem die Begriffsgehalte dargelegt worden waren. Als etwa die "Realien" in den Kanon eingeführt wurden, vermochte noch kein klar definierter Forschungsgegenstand einer Wissenschaftsdisziplin den Begriff eindeutig zu prägen. Die Unklarheit wurde von einer anderen Seite unterstützt: Die Wissenschaften, welche in der

Schulbildung vorkamen, standen unter einem sinntheoretischen Horizont mit *philosophischem* oder geisteswissenschaftlich-ethischem Akzent.[19] Dieser Zustand hat sich bis heute nicht wesentlich geändert. Die wertvollen didaktischen Analysen zur Bestimmung der Bildungsziele gelangten ihrerseits auch nicht zu allseitig anerkannten Bildungskategorien für diese Fächer. Die Fachbezeichnungen bleiben bis heute heterogen und bedürfen eines Vergleiches. Dabei sind die jeweiligen Strukturen der Entstehung mitzuberücksichtigen.

Die Fachbezeichnung gibt in vielen Fällen unmittelbaren Aufschluß über die *historische Bedingtheit* bzw. die Aktualität des Faches. Die Fächer sind aus verschiedensten Anlässen in den Bereich des schulischen Unterrichts eingegangen, die einen mit dem Aufkommen einer Technik zur Bewältigung von konkreten Lebenssituationen (Schreiben, Lesen, Rechnen), andere mit der Hochblüte einer geistesgeschichtlichen Epoche (Literatur, Philosophie), wieder andere mit den ersten Erfolgen einer wissenschaftlichen Forschungsmethodik (Astronomie, Physik).

Die Analysen der Fachinhalte und -ziele (3. und 2. Kriterium) fördern aber oft zu Tage, daß die Fachbezeichnungen mit den tatsächlich vorhandenen Unterrichtsgegenständen nicht übereinstimmen. Diese Divergenzen sind bereits im ersten Abschnitt anzugeben, damit keine unbegründeten Erwartungshaltungen an die Inhaltsanalyse herangetragen werden.

Für die Konstruktion des Lehrplans und die Schulpraxis ist die *inhaltsgerechte und der Umgangssprache angepaßte Fachbezeichnung* von großer Bedeutung. Antiquierte Überschriften bringen leicht die Kritik einer konservativen Denkform ein. Ein Curriculum sollte aber stets prozessual und auf Verbesserungen angelegt sein. Unangepaßte Titel wirken als Lernhemmungen im Bereich der kognitiven Motivation. Wenn sich die Fachbezeichnung nicht mit dem Erlebnis- und Verstehenshintergrund deckt, den der Schüler mitbringt oder den er im alltäglichen Umgang mit den Lerninhalten des Faches gewinnt, so muß der Lernvorgang auf eine wichtige Basis an kognitiver und emotionaler Fundierung verzichten.

Es ist wahrscheinlich, daß sich zwar auch mit der Fachbezeichnung, die mit dem alltäglichen Erfahrungsraum nicht übereinstimmt, ein “Begriffsrahmen” beim Schüler bildet. Doch wird dieser für die Schulsituation spezifisch und erschwert die Übertragung in die außerschulische Verhaltenssituation. Ein bekanntes Beispiel für inadäquate Fachbezeichnungen ist “Erdkunde”.

Unter “Stellung in der Fächerreihe” versteht man die formale Position innerhalb des Kanons. Es wird nicht der Befund der Analyse nach Inhaltsklassen oder das Ergebnis der Häufigkeitsverteilung von Wochenstunden oder ähnlichen Merkmalen vorausgenommen. Vorrangig ist die Abgrenzung des Fachbereiches, also die Antwort auf die Fragen: Welche Gebiete gehören zum Fach? Welche sind auf ein anderes Fach hin konzipiert? Welche werden gemeinsam mit einem anderen Fach behandelt? Fachüberlappungen sind nur anzugeben, soweit sie in der äußeren Organisation des Lehrplans verankert sind. Inhaltliche oder methodische Überschneidungen werden vor allem im 3. Abschnitt "Inhalte und Inhaltsstrukturen" behandelt.

Hier sind ebenfalls die Qualifikationen als Haupt-, Neben-, Wahl- oder Freifach anzuführen. Bei kleiner Streuung, d.h. wenn nur wenige Schulen ein Fach nicht als Hauptfach führen, legt sich nahe, Haupt- und Nebenfächer einer gemeinsamen Inhaltsanalyse zu unterziehen.

2. Begründung und Funktionsbereiche

Begründung

Jedes Fach hat seine Existenz im Unterrichtsgefüge als rechtmäßig zu erweisen. Die Tradition allein verbürgt die Rechtmäßigkeit nicht. Deshalb enthalten viele Lehrpläne Aussagen über die Motive, weshalb das Fach im Kanon erscheint. Diese Begründungen, meist in Form von Sätzen, sprechen von kultureller bzw. gesellschaftlicher "Notwendigkeit" oder stützen sich auf die sogenannten bürgerlichen Tugenden, die ihrerseits aber vornehmlich die Ideale gesellschaftlicher Lebensformen repräsentieren. Dennoch ist es nach den bisherigen Erfahrungen möglich, zum Thema der Begründung einige Inhaltsklassen zu erstellen und sie zusammenhängend zu interpretieren. Jene Lehrpläne, die keine Begründung des Faches vorlegen, werden nicht gesondert vermerkt.

Die Überlegungen, welche in den Lehrplänen für die Begründung des Faches dargelegt sind, ergeben in manchen Fällen ein ungenügendes Bild. Deshalb lassen sich die spezifischen Sätze zur Begründung mit solchen aus dem Gebiet der Fachziele bzw. Funktionen des Faches ergänzen. Die Fachziele sind breiter ausgefaltet und bieten viele Daten für die Auswertung. Sofern Zielaussagen in die Kategorie der Begründung übergehen, hat sich ihr Gehalt auf die Frage nach der Begründung zu zentrieren. Sie sind nur dienlich, wenn sie auf die Fragen Antwort geben:

Warum erscheint das Fach als solches im Kanon? Ist es aus wissenschaftstheoretischen, kulturellen, berufspraktischen, berufsständischen, lebenspraktischen, politischen, bildungstheoretischen, schulorganisatorischen oder anderen Gründen konstituiert und in die Fächerreihe aufgenommen worden? Die Beantwortung solcher Fragen, die z.T. in den fachdidaktischen Analysen schon als Beurteilungskriterien formuliert sind, trägt zur kritischen Einstellung gegenüber der Ideologie der einzelnen Fächer und des Lehrplans überhaupt bei.

Bei der Erarbeitung der Begründung gilt es, noch folgende Erleichterung zu beachten: Im Abschnitt 3 "Inhalte und Inhaltsstrukturen" wird am Schluß, nachdem die gesamte Analyse der fachimmanenten Bildungsinhalte abgehandelt ist, die Struktur (Aufbau, Anlage) des Faches dargestellt. Aus den dort anfallenden Resultaten lassen sich viele für die Begründung auswerten.

Funktionsbereiche

Die Analyse der Funktionsbereiche des Faches ergänzt die "Begründung". Sie bringt den prospektiven und teleologischen Gesichtspunkt in den Vordergrund und behandelt das "Wozu" des Fachunterrichtes. Im Hintergrund der gesamten Analyse der Funktionsbereiche steht die Frage: Welche Ziele, Zwecke, Funktionen werden mit dem Fache angestrebt? Die Analyse selber benützt zwei Dimensionen von Kriterien: In der umfassenden, logisch allgemeineren, befinden sich folgende vier Funktionsbereiche:

Wissenschaft
Beruf
Kultur
Persönlichkeit.

Das Vorhandensein der vier Funktionsbereiche ist in jedem Fach abzuklären. Hinzu kommt eine untergeordnete Dimension von Funktionsbereichen, die je nach Fach gewisse Verschiebungen aufweist. Sie gliedert die vier Hauptbereiche auf und spezifiziert sie in Hinsicht auf die einzelnen Fächer.

Mit andern Worten, in jedem Fach wird zuerst allgemein danach gefragt, ob die vier Grundfunktionen anvisiert werden (übergeordnete Dimension). Dann wird geprüft, in welcher (fachtypischen) Form, auf welchen Gebieten und mit welchen Gewichtungen die vier Grundziele verfolgt werden (untergeordnete Dimension). Letzteres geschieht in der anfangs beschriebenen Art: Zuerst werden alle Aussagen zu den vier Hauptkriterien gesammelt, dann in Inhaltsklassen zusammengefaßt, auf ihre Häufigkeit untersucht und zuletzt zusammenfassend interpretiert.

Die vier Hauptkriterien sind zum Teil empirisch gewonnen, zum Teil sind sie aus einem theoretischen Verständnis der Bildungs- und Erziehungsfunktion der Schule abgeleitet. Sie sind empirischen Ursprungs, insofern sie nach den tatsächlichen Aussagen in den Lehrplänen aufgestellt wurden.[20]) Die Kriterien sind ebenfalls empirisch fundiert durch die Tatsache, daß die Lebensvollzüge der Kultur (im Sinne der Soziologie und Kulturanthropologie), im besonderen aber des Berufes faktisch durch die Schule beeinflußt werden. In ähnlicher Weise gilt das für die Kriterien Wissenschaft und Kultur, wie Robinsohn ausgeführt hat.[21]) Was bedeuten nun die vier Funktionsbereiche im einzelnen?

Funktionen im Bereich der Wissenschaft. Sie ergeben sich, wenn die Unterrichtsinhalte auf die methodische Erforschung eines Gegenstandes und die daraus folgenden Wissensbestände ausgerichtet sind. Als Gegenstände oder Gegenstandsfelder kommen vor allem jene in Frage, die durch die heutigen Wissenschaften umrissen sind. Besitzt ein Fach seine "Sinnintention" in der Beherrschung wissenschaftlicher Methoden und der Kenntnis von Forschungsergebnissen, dann erfüllt es ausdrücklich eine wissenschaftspropädeutische Funktion. Seine Bedeutung liegt dann weniger im Verständnis der Kultur, vielleicht auch weniger in der Förderung eines Idealbildes von Persönlichkeit.

Bei den Höheren Schulen orientiert sich die Wissenschaftlichkeit vor allem an den universitären Disziplinen, wobei versucht wird, in die wissenschaftsspezifischen Denkformen einzuführen. Die wissenschaftlichen Funktionen des Schulfaches zeichnen sich in dieser Hinsicht als Methodik und Denkform mit propädeutischem Charakter aus.

Aus der formulierten Zielgebung lassen sich die wissenschaftlichen Funktionen oft nicht erkennen. Sie sind vielmehr das Nebenprodukt einer bestimmten Grundlegung des Faches. Dabei werden die einzelnen Gebiete der Wissenschaft zusammengerafft, oft eine Stufe tiefer transponiert und als Schulfach ausgegeben. Diese Art von Wissenschaftlichkeit ist in den Lehrplänen und Schulbüchern meistens nicht als Ziel formuliert, läßt sich aber leicht aus der Inhaltsstruktur des Faches (vgl. Abschnitt 4) herausarbeiten. In diesem Fall liegt die Funktion des Faches zwar auch im Bereich der Wissenschaft. Die Propädeutik bleibt im allgemeinen aber hermeneutisch ungeklärt. Die Wissenschaftlichkeit gewinnt nicht den Rang einer expliziten Bildungskategorie. Folglich fehlt meistens auch das Modellverständnis für wissenschaftsspezifische Erkenntnisgewinnung. Dennoch zählen die so strukturierten Fächer zu jenen mit wissenschaftlichen Funktionen. Bei ihnen ist Wissenschaft vornehmlich jenes Wissensreservoir, aus dem die Unterrichtsstoffe herausgegriffen sind.[22])

Die Frage, ob und in welcher Form Funktionen im Gebiet der Wissenschaft berücksichtigt sind, wird zum Kriterium für die Unterscheidung der einzelnen Schultypen. So wird z.B. die Differenz zwischen Volksschule und Gymnasium an der andersgearteten Verwendung der wissenschaftlichen Befunde offenkundig. An der gleichen Frage scheiden sich die einzelnen Fächer voneinander.

Funktionen im Bereich des Berufes. Unter Beruf ist das Gesamt der Betätigungen zu verstehen, die nach der Ausbildungszeit einsetzen, meistens um eine abgegrenzte Objektwelt gruppiert sind und mit dem Erwerb des Lebensunterhaltes in enger Beziehung stehen.

Die Betrachtungskategorie "Beruf" ist durch die Auflösung der klassischen Ordnung des Berufswesens fraglich geworden. Doch scheint sie selbst dann noch gerechtfertigt zu sein, wenn die Berufswechsel "institutionalisiert"[23]) sind, die Berufsmobilität zu einem integrierten gesellschaftlichen Prozeß geworden und der klassische Begriff von "Beruf" seines herkömmlichen Sinnes entleert ist.[24]) Selbst wenn die Schule in einer "nivellierten" Gesellschaft im Sinne von Schelsky die "Statuszuweisung" überwinden und vollständig als "Mittelklasseninstitution" (Lütkens) etabliert würde, wäre ihr Einfluß auf die Betätigungen, die sich unter den Begriff "Beruf" einsammeln lassen, unübersehbar. Der Einfluß wird durch die Funktionalisierung der Schule noch wachsen. Die zunehmende Komplexität der beruflichen Verrichtungen verlangt verfeinerte intellektuelle Leistungen, besonders in Form von Problemlösungsverhalten, welches durch das Lernen in der Schule vorbereitet wird. Dadurch schaltet sich die heutige "überintellektuelle" Schule, wie sie Havighurst unter sozialpsychologischem Aspekt kritisiert, in die Gestaltung des beruflichen Feldes ein.[25])

Ein Fach erfüllt dann Funktionen im Bereich des Berufes, wenn seine Bildungsinhalte für die voraussichtliche berufliche Tätigkeit unmittelbar bedeutsam sind. So ist etwa die Disziplin Geographie in der Lehrerbildung als berufsbezogen zu qualifizieren, wenn die Unterrichtsinhalte nach dem künftigen Gebrauch ausgewählt sind, Züge einer schuldidaktischen Analyse tragen und vielleicht mit methodischen Hinweisen versehen sind.

Auf den Stufen der Volks- oder Sekundarschule treten die Aspekte direkter Berufsbildung selten oder nicht zu Tage. Dort handelt es sich mehr um Berufsvorbildung oder mittelbare Berufsvorbereitung, indem sich ein Fach nach den Anforderungen beim Beginn einer Berufslehre, eines Technikums oder eines berufswissenschaftlichen Universitätsstudiums richtet. Die Elemente, welche für die einzelnen Berufsfelder wichtig sind, variieren je nach Fach und sind nicht generell festzulegen.

Funktionen im Bereich der Kultur. Sie umfassen alle Ereignisse des täglichen Lebens, soweit sie mit den Schülern gegenwärtig oder künftig in Beziehung stehen. "Kultur" meint nicht nur die zweckfrei, künstlerisch-ästhetische Lebensgestaltung. Der Terminus betrifft in der Sprechweise der Kulturanthropologie auch Phänomene des deutschen Begriffes "Zivilisation". Hierher gehören im weitesten Sinne die Technik, der Umgang mit der Natur, der zwischenmenschliche Bezug, sofern er in einer bestimmten Form zu vollziehen ist oder bestimmte Voraussetzungen bedingt.

Da es bei den Analysekriterien reale "Funktionen" herauszulösen gilt, sind Kulturstoffe, welche zwar in der Schule zum Unterricht gehören, mit der jetzigen und künftigen Umwelt der Schüler aber nicht in Berührung stehen, nicht zu verzeichnen.

Die Auseinandersetzung mit kulturellen Belangen in der Schule kann zu zwei Zielen führen: –zur einfachen Beherrschung der kulturell bedeutsamen Verhaltensschemata oder Medien –, zu Verständnis und Interpretation kultureller Phänomene. Robinsohn spricht in einem ähnlichen Zusammenhang von "*Orientierung* innerhalb einer Kultur" und von der "*Interpretation* ihrer Phänomene".[26]) So gibt es in der Schule das Modell[27]) als antizipierende Form einer Vielzahl von künftigen Erscheinungen (z.B. Behandlung der Kommunikationsmittel an Hand des Rundfunks) und das Modellverständnis[28]) als zusätzliche Einsicht in die Funktionsweise des Modells selber.

Funktionen im Bereich der Persönlichkeit. Hier kommen alle jene Ziele und Funktionen zur Sprache, die einer bestimmten Vorstellung von Menschsein entspringen oder durch eine anthropologische Theorie überformt sind. Es sind weltanschaulich, philosophisch erarbeitete Werte, Ideale der Gesellschaftsordnung, Konzepte der individuellen Reifung oder formulierte ideologische Ziele. Typisch für Funktionen im Bereich der "Persönlichkeit" sind die "bürgerlichen Tugenden", die in fast allen Lehrplänen auftreten.[29]) Solche Tugenden sind u.a. Treue, Rechtschaffenheit, Fleiß, Gerechtigkeit, Ehrfurcht. In Hinsicht auf die konkreten Unterrichtsinhalte erweisen sie sich als Formalkategorien mit Akzent auf dem Ideellen und Theoretischen. Sie sind verwandt mit den Zielen der früheren "Gesinnungsfächer".

Der Realitätsgehalt und die Intention, welche in solchen Funktionsbereichen enthalten sind, scheinen am besten im Begriff "Persönlichkeit" aufgehoben zu sein. Wenn in der Umgangssprache von der Entwicklung zur Persönlichkeit gesprochen wird (wie es in den Lehrplänen häufig vorkommt), ist immer *etwas Künftiges, Ideales* gemeint. In den empirisch arbeitenden Humanwissenschaften verbindet sich Persönlichkeit immer mit Persönlichkeitstheorie als einem gegenwärtig aufgestellten Vorstellungsmodell, dessen innere Form sich zu erweisen hat.

In die Kategorie "Persönlichkeit" sind die neuerdings in der Schultheorie immer wichtiger werdenden Begriffe *Sozialisation* und Psychohygiene einzugliedern; ferner Teilziele anthropologischer Systeme, politische Programme, religiöse Formen und Idealgestalten von einzelnen Interessengruppen.

3. *Inhalte und Inhaltsstrukturen*

Die Aufteilung in Inhalte und Inhaltsstrukturen ist nicht durch die didaktische Theorie begründet, sondern wegen der Technik des Vorgehens notwendig geworden. Es wäre aus bildungstheoretischer Sicht wünschbar gewesen, die didaktische Struktur zusammen mit dem Inhaltlich-Stofflichen in die Analyse einzubeziehen.[30])

Die vergleichende Analyse der Lehrpläne von verschiedenen Ländern oder, wie in unserem Fall, von 52 Lehrerbildungsanstalten ist nur möglich, wenn die behandelten Themen *als kleine Einheiten operationalisiert* werden. Überdies zeigte sich bei der ersten Untersuchung, die nach diesem Verfahren angegangen wurde, daß sich der didaktische Aspekt leicht im rein Inhaltlichen verliert, weshalb sich eine gesonderte Beschäftigung mit den Inhaltsstrukturen ebenfalls von dieser Seite aufdrängt.

Die Bedeutung der Analyse von Inhalt und Inhaltsstruktur bezieht sich auf das Gesamt des Lehrplans und auf die innere Gestalt des Faches. Die Inhaltsanalyse beschafft die Grundlagen für die Ermittlung des Stellenwertes des Faches im Kanon. Die Analyse der Funktionen gibt Einblick in die Zweckhaftigkeit des Faches; die Analyse der Inhalte zeigt die vorhandenen Lernobjekte, d.h. von jedem Fach: Ausmaß, Schwerpunkte, Randphänomene, Zusammensetzung, Aufbau, Dichte von Lerngegenständen, Kohärenz. Insbesondere die Analyse der Inhaltsstrukturen belegt, ob das Fach typisch ist für die Schulstufe, ob es zu wissenschaftlich, zu pragmatisch oder überhaupt nicht strukturiert ist. Es läßt sich herausarbeiten, welche Art von Bildung ein Fach vermittelt und ob es in dieser Art bedeutungsvoll ist für das angestrebte Bildungsziel der Schule.

Behandelte Inhalte

Bei einer ersten Durchsicht der Lehrpläne und weiteren Unterlagen (Jahresberichte, Fragebogen, Klassenbücher) sind alle auftretenden Unterrichtsthemen zu notieren. Im zweiten Schritt werden die verschiedenartigen Gebiete zu *Inhaltsklassen* zusammengefaßt. Je nach Fach und Anzahl von Schuljahren sind zwischen 5 bis 20 Klassen nötig. Der dritte Schritt besteht in der Erstellung einer Tabelle mit der Häufigkeitsverteilung, d.h. es wird eine Übersicht zur Doppelfrage aufgebaut: welche Fachgebiete werden in welchen Lehrplänen (Schulen, Ländern usw.) behandelt? Die Tabelle beinhaltet folglich die *absolute Häufigkeitsverteilung* der behandelten Fachgebiete, unabhängig von der Streuung auf die einzelnen Schuljahre und Semester. Sie umfaßt das Gesamt an Unterrichtsinhalten, welche der Absolvent eines bestimmten Schultyps gelernt hat. Es ergibt sich das Total der unterrichteten Stoffgebiete innerhalb einer Schulstufe. Neben der tabellarischen Übersicht eröffnet ein ausgedehnter Textteil Einblick in die Stoffverteilung, wobei auch die Besonderheiten der einzelnen Schulen hervortreten. Dieser Text hat möglichst umfangreich die verschiedensten Themen, die innerhalb des Faches unterrichtet werden, darzulegen, um bei der Konstruktion von neuen Lehrplänen, oder bei der Revision als Dokumentation auszuhelfen. Die ausführliche Darstellung der unterrichteten Bildungsinhalte macht den Text auch geeignet für das Fach "Bildungsinstitutionen" oder "Theorie des Lehrplans" in der Lehrerbildung.

Inhaltsverteilung auf die einzelnen Schuljahre

Für die nationalen und internationalen Koordinationsbestrebungen hat es sich als zweckmäßig erwiesen, nicht nur das Total der unterrichteten Inhalte herauszuarbeiten, sondern ebenso die Streuung auf die einzelnen Klassen. Da die verschiedenen Schultypen mit differierenden Einheiten rechnen (Semester, Kalenderjahre, Trimester, Kurse), ist die Inhaltsverteilung auf die *einheitliche Skala der Schuljahre* zu beziehen. Darunter versteht sich die Aufgliederung der schulischen Ausbildung in Einheiten von 365 Tagen, beginnend mit der Einschulung.

Wenn die Lehrplananalyse in besonderem Maße einen didaktischen Zweck verfolgt, indem etwa Grundlagen für den Aufbau von Schulbüchern zu schaffen sind, empfiehlt sich die *Analyse der Inhaltsverteilung unabhängig von einzelnen Schuljahren.* Von ihr ist ein Beitrag zum Thema der optimalen Lernorganisation, des altersgemäßen Unterrichts und der sachlogischen Abfolge der Fachgebiete zu erwarten.

Inhaltsstrukturen

Unter den Begriff der Inhaltsstrukturen fallen alle Aufbauformen des Unterrichtsfaches bezüglich seines Inhaltes. So kann ein Fach das Abbild der wissenschaftlichen Erkenntnisgewinnung im betreffenden Objektbereich darstellen. Es kann eine *erkenntnisgenetische oder wissenschaftsmethodische Struktur* besitzen.

Im Gegensatz dazu steht die *funktional-pragmatische Struktur:* Die Unterrichtsgebiete beschränken sich auf jene Gebiete, die dem Schüler künftig als alltägliche Verhaltenssituationen begegnen. Der Gesichtspunkt für Auswahl und Anlage der Themen ist dann zweckhaft im Bereich der Lebenspraxis. Daneben zeigt sich vielleicht eine funktionale Strukturierung in Hinsicht auf den *Beruf.* Bekannt sind auch Lehrpläne, die nach dem *Prinzip der Aktualität* gegliedert sind (z.B. für das Fach Geographie oder Muttersprache). Dabei unterscheiden sich solche, die aktuelle Ergebnisse als Ausgangspunkt für eine weiterführende didaktische Analyse verwenden und das "Aktuelle" nur als Einstieg zur exemplarischen Strukturierung benutzen, von solchen, die beim Aktuellen verbleiben und im Wissen um die je gegenwärtigen Vorkommnisse das Bildungsziel erblicken.

Im Fach Geographie kann etwa der "Heimatbezug" als durchgehendes Strukturprinzip fungieren, beim Sprachunterricht eine linguistische, fachwissenschaftliche Theorie, im Rechnen ein mathematisches Denkmodell. Häufig treten fachübergreifende Strukturen auf.

Für *das Vorgehen* bedeutet diese Vielfalt von möglichen Strukturen: die für das Fach typischen Strukturen sind induktiv aus dem vorgegebenen Material zu gewinnen. Hinzu kommt die Abklärung, wieweit neuere Theorien der Lehrplan- und konkreten Unterrichtsgestaltung verwirklicht sind. Genannt seien die theoretischen Erörterungen über die Beziehung von Wissenschaftslogik und Lernvorgang (Theorien des Sprachaufbaus, der Mathematik usw.), Theorien über Lernökonomie, Denkprozeß und Sachkenntnis (in genetischer Hinsicht, wie z.B. bei Piaget), Theorien über eine kategoriale Bildung, das Verhältnis von Bildung und Wissen oder das Elementare, kulturanthropologische Überlegungen zur Funktion der Schule im gesellschaftlichen Leben, insbesondere der Sozialisation. Ergebnisreich ist ebenfalls die Frage nach ideologischen Momenten, welche die Fachstruktur bestimmen, und nicht zuletzt die Frage, ob überhaupt ein Aufbau vorhanden ist.

Am Kriterium der Inhaltsstruktur läßt sich die Ausbildungs*form* diagnostizieren. Hier unterscheiden sich die verschiedenen Schultypen. Die wissenschaftlich orientierten Ausbildungsgänge setzen sich von den technisch-wirtschaftlich gewichteten, die unteren Stufen von den oberen ab. Der Vergleich der faktischen Inhaltsstrukturen mit den angekündigten Zielen und Funktionen des Faches macht die innere Kohärenz des Lehrplans deutlich. Zudem ist hier der Ort gegeben, wo sich die spezifisch didaktischen Probleme diskutieren lassen.

Lehrbücher

In die Rubrik "Lehrbücher" gehören die Werke, nach denen die Schüler oder Studenten die Unterrichtsinhalte lernen. Eingeschlossen sind die häufig verwendeten polykopierten Manuskripte. Für den Fall, daß die Schüler kein Lehrbuch benutzen und die Inhalte nach Diktat oder eigener Notiz lernen, sind die wichtigsten Werke anzugeben, auf die sich der Unterrichtende stützt.

Wenn die Lehrbücher aufgeführt sind, geschieht das zu Kontroll- und Informationszwecken. Die Lehrpläne verkünden oft Lehrziele, die nach Auskunft der Inhaltsanalyse nie zu erreichen sind. Durch die Lehrbücher, deren Aufbau den Fachkreisen bekannt ist, wird ein direktes Vorstellungsbild vom tatsächlichen Unterricht vermittelt.

Die Information dient vor allem der Koordination und der Weiterbildung der Unterrichtenden sowie den Lehrplanautoren.

4. Unterrichtsorganisation

Die Wirksamkeit des Unterrichts, die sogenannte Bildungseffizienz, wird nach Aussage motivations- und denkpsychologischer Erkenntnisse entscheidend vom Faktor "Unterrichtsmethodik" bestimmt. Da verschiedene Verfahrensweisen beim Lernen auch verschiedene Arten von Wissen, Bildung, Einstellung und Verhaltenspotenzen bewirken, ist in den Lehrplänen zusammen mit der Angabe der Inhalte die Form des Vorgehens zu besprechen. Die Curriculumplanung hat die Zweiheit von Inhalt und Organisation des Unterrichts von Anfang an gemeinsam zu berücksichtigen. Für die Analyse der vorhandenen Lehrpläne stellt sich entsprechend die Aufgabe, nach den fehlenden, latenten und offenen Organisationsformen zu suchen. Die Methodenfreiheit des Lehrers wird durch die Besprechung der Unterrichtsorganisation nicht beschränkt, da im Vordergrund nicht das Diktat einer einzigen Methodenlehre steht, sondern der Aufweis der Relation von Bildungseffizienz und verschiedenen Methoden.

Methoden

Folgende Analysekriterien haben sich bei der Sekundarschulstufe (5.–13. Schuljahr) als bedeutsam erwiesen.

Unterrichtsformen. Das Kriterium Unterrichtsform besitzt eine hohe Trennschärfe. Zu berücksichtigen sind u.a. Frontal-, Gruppen-, Blockunterricht, Vorlesung, Seminar, Programmierter Unterricht, Konzentrationstage und -wochen. Dabei lassen sich Schulstufen, Schultypen (z.B. sprachliche, naturwissenschaftliche Richtung), Unterrichtssysteme, Länder, leicht voneinander absondern.

Bei den höheren Unterrichtsstufen sind ebenfalls die Seminar- und Diplomarbeiten mitzubehandeln. Wichtige Gesichtspunkte für die Beurteilung solcher Arbeiten sind Anzahl, Thema, Umfang, Leitung und Funktion.

Oft determinieren Spezialverfahren den gesamten Ausbildungsgang, so etwa, wenn der Unterrichtende nur nach dem Prinzip der Aktualität vorgeht.

Fachübergreifende Anlage. Die Untersuchungsfrage lautet: Wie voll-

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zieht sich die bei der Inhaltsanalyse angezeigte fachübergreifende Inhaltsstruktur unter organisatorischem Aspekt? Die Befunde sind beim Fachlehrersystem und bei gehobenen Ausbildungsstufen (ab 11., 12. Schuljahr) oft negativ, indem sich herausstellt, daß im organisatorischen Bereich eine völlige Fächertrennung befolgt wird, wobei sich die "fachübergreifende Anlage" nur auf die Inhaltsverteilung innerhalb des Faches bezieht.

Lernkontrollen. Es ist abzuklären, welche Komponenten die Schlußnote bestimmen, wieweit mündliche und schriftliche Lernkontrollen zur Schlußqualifikation beitragen, ob überhaupt eine Benotung vorgenommen wird. Bedeutsam sind die Variablen "Anzahl" und "Art der Lernkontrollen" während des Unterrichts in ihrer Funktion als Lernhilfen. Die Interpretation der Ergebnisse erfolgt in Verbindung mit der Unterrichtsform. Die einzelnen Unterrichtsformen bedingen variierende Gesetzmäßigkeiten der Lernkontrolle und Lernverstärkung.

Die Frage der Lernkontrolle ist innerhalb der Lehrerbildung oder innerhalb eines umfassenden Lehrplans unter das allgemeinere Kapitel der Unterrichtsorganisation zu subsumieren. In der Planung eines neuen Curriculums verdient sie eine besondere Beachtung. Das Benotungssystem repräsentiert einen Teil der gesellschaftlichen Wirksamkeit der Schule und der effektiven Lernleistung.

Unterrichtsmittel

Lehrbücher, Kolleghefte: In der Inhaltsanalyse sind die Lehrbücher aufgeführt worden, um die im Lehrplan postulierten Ausbildungsziele auf ihren Realitätsgehalt zu prüfen, und um die Unterrichtsinhalte genauer abzustecken. Hier kommen sie zur Sprache, um ihre Eigenschaft als Unterrichtsmittel herauszuarbeiten. Der Betrachtungsaspekt ist die Methodik. Im Anschluß an die Lehrbücher folgen die weiteren Unterrichtshilfen wie Arbeitsblätter, Sammelmappen, Kolleghefte. Bei den höheren Schulen bedarf die Frage der diktierten Eintragungen und der vom Schüler ausgewählten Notizen der besonderen Beachtung.

Weitere Unterrichtshilfen – besondere Medien: Sie differieren von Fach zu Fach. Zu nennen wären Studienfahrten, Fachzeitschriften, in besonderen Fällen Schallplatten, Filme usw. Unter Umständen gehören Fachschaften zu diesem Kriterium.

5. *Fachlektionen pro Woche*

Um die zeitliche Ausdehnung des Unterrichts im Vergleich zu erfassen, wird eine Übersichtstabelle mit der Häufigkeitsverteilung der Lektionen pro Woche erstellt. Sie enthält zuerst die Anzahl der Unterrichtseinheiten

(Lektionen) pro Woche. Da die Unterrichtseinheiten bei den einzelnen Lehrplänen verschiedene Dauer aufweisen und die Zahl der Unterrichtswochen pro Jahr schwankt, wird zusätzlich das Unterrichtstotal in Stunden (zu 60 Minuten) pro Jahr (365 Tage, 2 Semester) errechnet. Das Unterrichtstotal pro Jahr kann als Koeffizient für die Gewichtung der Häufigkeit der Fachlektionen pro Woche verwendet werden.

6. *Folgerungen für die Planung und Unterrichtsreform*

Dieser letzte Abschnitt dient nicht der Zusammenfassung der erarbeiteten Resultate der früheren Abschnitte, sondern ihrer prospektiven Aufschlüsselung. Es geht nur noch um die Planung und Reform, indem die Ansätze für die Einzelforschung zum Vortrag kommen. Aus der Lehrplananalyse selber sollte kein neuer Lehrplan (Curriculum) zusammengestellt werden. Doch gewinnt die Vorbereitung eines umfassenden Curriculums in der Lehrplananalyse einen Teil ihrer Ausgangsbasis.

Wenn die untersuchten Lehrpläne oder Schulsysteme zeitlich nacheinander konzipiert worden sind, läßt sich die *Entwicklungstendenz* aufzeigen, worin wiederum die Forschungsarbeiten zu lokalisieren sind. In diesen Rahmen gehören die Hinweise auf die bisherigen bildungspolitischen Motive, welche die Lehrplankonstruktion bestimmt haben. Oft ergibt sich gerade hier das Bedürfnis, das Vorgehen zu umreißen, welches bei der Abklärung von Sachfragen zur realitätsgerechten Fundierung der politischen Argumentation einzuschlagen ist.

Die Folgerungen betreffen aber nicht nur die allgemeinen Fragen der politischen Grundlegung des Curriculums. Sie gruppieren sich ebenso, und vielleicht noch intensiver, um den konkreten Unterricht. Der Vergleich der Lehrpläne hat viele Divergenzen zu Tage gefördert. So stehen oft zwei oder mehrere völlig verschiedene Unterrichtsprogramme (meistens unbegründet und unvermittelt) nebeneinander. Die Differenzen sind aufzugreifen und als Probleme zu formulieren. Bei der entsprechenden Fachkenntnis können sofort die Ausgangspunkte für die Abklärung der richtigen Lösung durch ein Entscheidungsexperiment angegeben werden. Die Probleme können natürlich aus allen Untersuchungseinheiten der Lehrplananalyse stammen, der Fachbezeichnung, dem Aufbau des Fächerkanons, der Begründung des Faches, seinen verschiedenen Funktionsbereichen, dem Inhalt, den Inhaltsstrukturen, der Unterrichtsorganisation oder im besonderen der Lernökonomie. Diese möglichen Problembereiche verstehen sich immer in Hinsicht auf die Gesamtstruktur des Curriculums bzw. des Schulsystems.

Dieser letzte Abschnitt (6) macht die Aufgaben der Lehrplananalyse am besten deutlich Die Analyse führt zu Entwürfen für die *Vorbereitung* des künftigen Unterrichtsprogramms, und dient damit dem rationalen Entscheid über die Form der schulischen Bildung.

ANMERKUNGEN

1) "Curriculum" und "Lehrplan" sind prinzipiell synonym. Der früher auch im deutschsprachigen Raum gebräuchliche Begriff "Curriculum" hat sich während der letzten Jahre in pädagogischen Fachkreisen wieder eingebürgert. Er wird vor allem in Zusammenhang mit "Curriculum-*Forschung*" verwendet. Zur amerikanischen Literatur vgl.: Goodlad, J. I.: *School Curriculum Reform in the United States*, New York 1964; Miles, M. B. et al.: *Innovation in Education*, New York 1961; Taba, H.: *Curriculum Development*, New York 1962; Bloom, B. S. (ed.): *Taxonomy of Educational Objectives*. Handbook I, New York 1956.

Es ist hier bewußt von der Lehrplananalyse als Teil der Curriculumforschung die Rede, weil die meisten deutschen Unterrichtsprogramme noch den Namen "Lehrplan" tragen und weil nach der gegenwärtigen Fachterminologie mit "Curriculum" ein umfassender und auf vorausgehenden Forschungen basierender Unterrichtsplan gemeint ist, wie ihn die bisherigen Lehrpläne kaum oder selten darstellen. Die Lehrplananalyse dient dem Aufbau der künftigen Curricula bzw. wissenschaftlich fundierten Lehrpläne. Zum Begriff des Curriculums in der deutschen Sprache geben u.a. Aufschluß: Dolch, J.: *Lehrplan des Abendlandes*. Ratingen 1965, S. 318 f.; Robinsohn, S. B.: *Bildungsreform als Revision des Curriculum*. Neuwied 1967, S. 1.

2) Anweiler, O.: "Entwicklungstendenzen europäischer Schulreformen". In: *Bildung und Erziehung*, 20, 1967, S. 242–251.

3) Robinsohn, S. B.: a.a.O., S. 44 ff.

4) Loch, W.: "Organisation und Experiment im Bildungswesen". In: *Bildung und Erziehung*, 21, 1968, S. 125–137, 132.

5) Frey, K.: *Der Lehrplan der Real-, Sekundar- und Bezirksschulen*, Weinheim 1968. Die erste wie die zweite Untersuchung sind gemeinsam mit der Arbeitsgruppe für Lehrplanforschung im Pädagogischen Institut der Universität Fribourg vorgenommen worden. Die verschiedenen Projekte werden vom Schweizerischen Nationalfonds unterstützt.

6) Froese, L.: "Paradigmata des Selbstverständnisses der Vergleichenden Erziehungswissenschaft". In: *Zeitschrift für Pädagogik*, 13, 1967, S. 315–324, 324.

7) Hausmann, G.: "Aufgaben prospektiver Bildungsplanung". In: *Internationale Zeitschrift für Erziehungswissenschaft* Vol. XII, 1966, No. 3, S. 317–332, 320.

8) Anweiler, O.: "Konzeptionen der Vergleichenden Pädagogik". In: *Zeitschrift für Pädagogik*, 13, 1967, S. 305–314, 307.

9) Sie ist im Auftrag der "Konferenz der Direktoren schweizerischer Lehrerbildungsanstalten" und des "Schweizerischen Pädagogischen Verbandes" durchgeführt worden. Der Schlußbericht ist in zwei Bänden enthalten, u.z. die Strukturprobleme in *Die Lehrerbildung in der Schweiz* (Weinheim 1969), die einzelnen Fachanalysen in *Der Ausbildungsgang der Lehrer* (Weinheim 1969).

10) Vexliard, A.: *La pédagogie comparée*. Paris 1967, S. 30.

11) Weniger, E.: "Die Theorie der Bildungsinhalte und des Lehrplans". Teil I von *Didaktik als Bildungslehre*. Weinheim o.J. (1951), S. 7.

12) Dohmen, G.: "Das Fernstudium der Lehrer. Der Zusammenhang von Kulturtradition und Rückständigkeit der Schulen". In: *Pädagogische Provokationen I. Texte zur Schulreform*. Hrsg. K. Rebel, Weinheim 1966, S. 87–114, 87.

13) Robinsohn, S. B.: a.a.O., S. 27.

14) Vgl. hierzu: Hausmann, G.: a.a.O., S. 318 f. Weber, L.: "Grundsätze und Leitlinien zu einer Schulplanreform". In: *Schulblatt für Aargau und Solothurn*, 79, 1960, S. 195–200, 205–207.

15) Vexliard, A.: a.a.O., S. 160.

16) Ebenda.

17) Als Beispiel: Steiner, A. Berger-Kirchner, E., Vogel, W.: "Schulkoordination und Schulreform – ein untrennbares Paar". In: *Schweizer Erziehungs-Rundschau*, 41, 1968, S. 1–12.

[18] Die Untersuchung verläuft in diesem Stadium induktiv. Mit der induktiv gewonnenen Klassifikation ist ein Weg eingeschlagen, der gestattet, die "normative Subsumierung", welche bei jedem Vergleich nötig ist, möglichst realitätsgerecht zu gestalten. Sie unterliegt einem Minimum an subjektiver Entscheidung und Wertung. Das hier beschriebene Verfahren scheint uns ein Höchstmaß an Objektivität zu gewährleisten und vermag einen Beitrag zum Problem der Bedingung der Vergleichbarkeit zu leisten. Vgl. dazu die Besprechung von F. Hilkers Auffassung bei Seidenfaden, F.: *Der Vergleich in der Pädagogik*, Braunschweig 1966, S. 100. Ebenfalls: Froese, L.: a.a.O., S. 316 f.

[19] Dolch, J.: a.a.O. Vielleicht noch deutlicher bei: Paulsen, F.: *Geschichte des gelehrten Unterrichts*, Bd. 1, Berlin 1965.

[20] Die Inhalte der Lehrpläne stellen zwar ihrerseits bereits Resultate von Überlegungen, Absichten oder Vorstellungen dar und sind als solche eher "dogmatische Strukturen" (cf. Lennert) als ursprüngliche Erfahrung. In Bezug auf den Entdeckungszusammenhang und das Ziel der Untersuchung bilden die Sätze aus den Lehrplänen dennoch Erfahrungsgrundlagen. Lennert, R.: "Zum Problem der Wissenschaftlichkeit von 'Pädagogik'". In: *Neue Sammlung*, 8, 1968, S. 132–147, 135 f.

[21] Robinsohn, S. B.: a.a.O., S. 47.

[22] Es versteht sich, daß Fächer, die im letztgenannten Sinne aufgebaut sind, für die meisten Schultypen eine unglückliche Form der Wissenschaftlichkeit darstellen. Sie haben die Rolle einer "angewandten Wissenschaft", wie sie schon Litt abgelehnt hat. Sie verfehlen die jedem Fach bzw. jedem Unterricht innewohnende Zielgebung und letztlich auch die Zweckhaftigkeit. Litt, Th.: "Hochschule und Lehrerbildung". In: *Überlieferung und Neubeginn*, Hrsg. O. Hammelsbeck, Ratingen 1957, S. 33–37, 33.

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[30] Nach der Lehre über die Einheit von "Wissen und Bildung", wie sie Derbolav entwickelt hat, oder nach einem konsequent durchgehaltenen Prinzip der "Kategorialen Bildung" wäre eine gemeinsame Behandlung zu bevorzugen. Die beiden Konzeptionen sind dargelegt bei: Klafki, W.: *Das pädagogische Problem des Elementaren und die Theorie der kategorialen Bildung*. Weinheim 1964, S. 300 ff.

ANALYSIS OF CURRICULA AS A PHASE IN CURRICULUM RESEARCH

by Karl Frey, Fribourg

It is the analysis of existing curricula which constitutes the first phase of this research. The decisive element in this analysis is its prospective character; in other words, existing curricula are analysed with a view to how the future programme should be shaped. A comprehensive model for curriculum construction has been worked out for this purpose. The originator of this model drew it up at the University of Fribourg (Switzerland), with a team of fellow-workers, and used it in two surveys covering the whole of Switzerland (1. at the level of the lower stage in secondary education; 2. at the level of training for primary school teachers).

The plan put forward here constitutes the first phase of curriculum planning. It helps to determine whether or not reform is possible, to establish priorities and to define the hypotheses for certain types of differential research. It also helps to avoid misguided reforms which, while seeming to be reforms, in fact maintain the old system.

The plan deals with the position of the various disciplines in the curriculum as a whole, the different functions of the subject matter to be taught, the structures of this subject matter and of the educational process.

L'ANALYSE DES PROGRAMMES SCOLAIRES COMME PHASE DE LA RECHERCHE SUR LE "CURRICULUM"

par Karl Frey, Fribourg

C'est l'analyse des programmes scolaires existants qui constitue la première phase de cette recherche. L'élément décisif de cette analyse est son caractère prospectif; autrement dit, les programmes scolaires existants sont analysés en vue de la forme à donner au futur programme. Dans ce but, un modèle intègral de construction de programme scolaire a été préparé. L'auteur de ce modèle l'a fait à l'Université de Fribourg (Suisse), avec un groupe de collaborateurs, et l'a utilisé dans deux enquêtes concernant la Suisse entière (1. au niveau du premier cycle de l'enseignement secondaire; 2. au niveau de la formation des maîtres de l'enseignement primaire).

Le plan présenté ici constitue la première phase de l'élaboration du programme scolaire. Il sert à fixer la possibilité et les priorités de la réforme et à définir les hypothèses pour certaines recherches différentielles. Il sert également à éviter de fausses réformes qui, en réalité, sous l'apparence de réformes, conservent l'ancien système.

Le plan se rapporte à la position des différentes disciplines dans la totalité du programme, aux diverses fonctions de la matière à enseigner, aux structures de cette matière et à l'organisation de l'enseignement.

PARADOX AND PERSPECTIVE IN TECHNICAL ASSISTANCE TO LATIN AMERICA

by IRA J. WINN, Los Angeles, USA

In the years since the American Point 4 program was established in 1949, a sustained contact with the bitter social and economic realities in developing nations has forced a noticeable shift in the philosophy of assistance operations. There is now much greater recognition of the fact that technical assistance to underdeveloped areas implies far more than the training of scientists or the supplying of engineers and equipment. It has been learned, for example, that farm machinery is of little value without roads, skilled operators, and available mechanics. And more to the point, it has become evident that technical manpower or even machinery and buildings have intrinsic social and cultural implications.

Thus, on the face of things, the major economic problem of Latin America can be simply stated: The region cries for a vast expansion of markets essential to modern systems of production. But this need is not unrelated to the specific issue of the lack of the kinds of schools fundamental to raising the levels of hopes, expectations, and capabilities of her peoples. Also it raises the larger question of political climate and political control. Without the passage of reforms to insure that the benefits of education and greater production reach the peasant farmer and urban slum dweller, technical assistance loses its impetus and its direction. For without a coordinated movement toward social reconstruction, there can be little hope that technical aid can do any more than sink a splintered 20th century framework into the quagmire of an old order that brims with tragic potentiality. As Chester Bowles has capsuled the challenge of foreign assistance:

> "Unless these material gains are achieved through the kind of community participation that produces a sense of individual belonging and leads to greater justice and dignity, they may actually increase the embittering differences between rich and poor, and eventually lead to a political upheaval. While physical growth is *important* in nation building, what happens to people caught up in the process of such growth is *decisive*."1)

The American Contribution

American foreign aid has been declining in size since the 6.4 billion dollar high mark reached under the administration of President Truman. Indeed, despite the fearful claims of American opponents of American aid, the fact is that *all* U.S. economic aid has averaged only about one-third of one percent of U.S. income since World War II. The total of all kinds of foreign assistance to developing countries from all U.S. sources equaled only about one percent of U.S. income in 1966, and threatens to drop to its lowest post world war level (around 1.7 billions) in 1969.

Between 1946 and 1962, half of all U.S. overseas assistance was geared to vitalize war shattered Europe and to help Europe build and maintain military defenses. With American attention so riveted, less than twenty percent of all foreign aid expenditures were channeled as developed loan funds, technical assistance, or other nonmilitary grants to Asia, Africa, and Latin America. And one-sixth of this assistance took the form of Export-Import Bank loans which work strongly to subsidize the exports of American manufacturers and farmers. Not to be discounted, however, is that during this same postwar era, when Latin American treasuries were swollen from wartime sales of scarce raw materials, there was a failure to invest heavily in basic productive facilities and especially in the undernourished public sector; instead, Latin American capital was let loose in a postwar spending spree on overseas luxury markets.

In fiscal 1960, the United States maintained educational exchange programs with only seven of her Latin neighbors. From 1956–1959, of all International Cooperation Administration dollar obligations, only about seven percent went to education.2) In marked contrast, since 1961, dollar allocations for overseas technical assistance to Latin America have greatly increased in all areas, and particularly in education. In 1962–1963, U.S. education expenditures under the Alliance for Progress totalled almost 45 million dollars, which contrast with only 38 million spent in the six years between 1955 and 1961. And individual country allocations to education since 1963 in some cases have reached or exceeded the 20 million dollar mark.3)

The introduction of the Alliance for Progress in 1961 thus marks a turning point in the technical assistance picture for Latin America. With its avowed emphasis on the building of social institutions, the new stress included thrusting education into the role of a central key that would open the door to changing traditional values inhibiting democratic progress and that would enlarge the aspirations of the peoples of the region. Ostensibly it was recognized that the needed development of economic production and distribution is as much dependent upon a higher degree of educational attainment among the general population as upon the availability of capital resources. Nevertheless, a lingering question remains as to whether education as the vital tool of social change has been and used as the key that it was proclaimed to be.

Education and Development

Traditionally, planners have tended to view technical assistance and development needs primarily from the narrower perspectives of the economic sciences. In part this has been a function of short range political programming within which they must work. As constructive critics of American foreign aid have long pointed out, assistance to Latin America had no impetus until the political after-shock of the Cuban revolution. For many students of political process it has been the old story of too little and too late, a direct function of a fixation on the vain hope of encouraging the flow of private capital as the key remedy for the region. In fact, bi-national aid to Latin America, both from Europe and the U.S., has had to be rationalized or defended at home by the givers, principally in terms of its value to their export trade rather than in terms of basic development needs abroad. And thus former World Bank president, George Woods, was brought to attack bi-national assistance as a disruptive factor that serves to heighten bitter commercial rivalries and lead to reckless economic programming at the expense of the debtor nations that are supposedly being helped.4)

But political questions aside, equally important to understanding the position of education in the overall development picture is comprehending the bent of the planners. Their tendency has been to view educational development as well as national development in general primarily from the perspective of future manpower needs.5) That is, basic curriculum policies and important school needs are routinely measured against predictions of future requirement for specific occupational groups such as engineers or biologists. Educational growth and development, according to this concept of planning ,is thus firmly integrated into overall national and economic design.

Nevertheless, a more careful look shows serious deficiencies in this kind of blueprinting. As Ruscoe has tellingly made the point, a strict manpower view may lead to the conclusion that a nation has more agronomists than it can absorb, and that training should be reduced. But under a broader view of development it may be much more productive to expand the training of agricultural reformers who will create more opportunities for agronomists6). Two other weaknesses of the tight manpower approach are frequently minimized or overlooked. For one thing it is foolish to predicate educational development on growingly unpredictable work needs in an onrushing age of automation; the price in educational and economic dislocation resulting from long run failure of such "educated guesswork" is high. But a much more serious factor is also involved. In the rush to make education cater to specific vocational-economic predictions, it is easy to forget that the great anchor about the neck of the underdeveloped nations is the general unadaptability to change that characterizes the masses of uneducated people. By comparison, a population that is widely and "liberally" educated through at least several years of secondary school, is not only more receptive to new ideas, but is technologically trainable; it constitutes a more mobile and efficient labor force than does either a widely uneducated citizenry or one that develops the acute dependencies and rigidities of narrow, technical specialization. Especially is the latter factor all-important when the environment has overtones of educational and social elitism.

Yet, partly as a function of the manpower approach, programming for technical cooperation often reflects the more rigid and market fixated view. For example, even more revealing than the meagreness of the $ 2,789,141 budget for 1964 of the Inter-American Economic and Social Council was the nature of the problems selected for action and the relative dollar stress placed on each. With little exception, the emphasis was on technical and administrative problems and not on educational development or on projects tied to basic social change. Most striking was the contrast between the single largest grant ($ 632,000) directed toward eradication of a serious animal disease, and the very smallest allocation ($ 23,026) which was given for training in the applied social sciences. With the possible exception of a program for improved science teaching, which has immediate manpower implications, the 1965 budget showed a similar inclination.7) And in a parallel vein it can be seen that the courses of study at the Training Center for Regional Economic Development are geared to problems of banking, fiscal policy, market surveys etc., with relatively little or no emphasis on the problems of education and social structure.8)

The general trend of market dominated programming in its narrow sense is likewise evident in the overall survey of technical cooperation activities in the Americas, completed in 1963 by the Organization of American States.9) It too reveals that technical assistance, through whatever public or private channels, with few exceptions has evinced a conscious or unconscious design of avoiding a blunt encounter with the basic social and educational needs of Latin America. For while there is no doubt that the projects most heavily funded often represent important thrusts toward special areas of technical development, much more crucial are the general educational needs which for the most part remain neglected. This neglect is a direct function of a fixation on the production of high level professionals and an obsession with the business side of the marketplace. Yet, as the Majority Leader of the U.S. Senate warned in 1960:

> "Better markets are nice tranquilizers, but they won't cure the ills. As a nation, we have got to face up to that fact. So, too, must the Latin Americans. In plainest terms, the basic problem of Latin America is that the social structures of many nations of the region are seriously out of date... Most important, they do not provide for a sufficient number of people that intangible but essential element of prideful participation in the present and hope for the future which is the keynote of political stability."[10])

Education and Reform

Education has only recently come into vogue as a vital part of the investment picture for developing countries. In the past, little more than lip-service was paid to education by either political figures or development planners, although now it has become almost axiomatic that without a basic investment in education there can be no viable base from which to expand markets and production. Education expenditures are thus increasing markedly. But even now the awakening may be largely business oriented, with too little attention to education as a process of individual and social animation, both in an economic and a humanistic-political sense.

A key factor in hardening the lines of class distinction in Latin America is the failure to fill the gap between primary schooling and university education. Yet, under the initial thrust of the Alliance for Progress, secondary education received relatively scant attention. The detailed summary of U.S. education expenditures for 1962–63 is especially instructive, for it reflects the pattern of economic development thinking that long has had powerful influence even within the area of educational planning. Approximately 8 and 10 millions of dollars were then allocated to elementary and higher (and professional) education respectively. Only 425,000 dollars went toward direct funding of programs in secondary education. Indeed, secondary education as a category was generally absent from the summaries of individual country projects of that time.[11])

This lack of emphasis on secondary education is hardly a minor point. In the relatively static social structures of the hemisphere, secondary education traditionally has been almost a private reserve of the upper classes. The proportion of working class children in the middle schools of Brazil, for example, varies from only about 8.5 percent in the more industrialized state of São Paulo to less than 3 percent in the poorly developed states.[12]) Even in São Paulo, one of the wealthiest areas of Latin America, only about 25 percent of the age group 12–18 gets even part way through the secondary school, while the number of graduates amounts to a trickle.[13])

The traditional Latin American middle school curriculum is rooted in 19th and 18th century aristocratic values which keep the structure of education rigid and the process verbalistic and pedantic. Selection of a theoretically intellectual elite is one of the major goals of the secondary schools. This fact is evidenced in a study showing that in 1961 only 55 percent of *ginasiò* students were promoted in progressive São Paulo state.[14]) And at the elementary level, only about 16 percent of Brazilian children entering the first grade proceed through regular promotion to completion of the fourth year, although some 35 percent eventually make their way through the elementary school.[15]) The dislocation and blockage of Latin American school systems result in exceedingly high dollar costs and have grave effects upon teaching due to the highly abnormal age-grade mixture.High drop-out and course repetition rates are symptomatic, for both public and private secondary schools of the region are geared almost totally to meeting the university entrance and social status needs of the minority of children that come from upper and middle class homes. Yet in some countries the universities may serve less than 1 percent of the youth population.

This kind of middle school orientation reinforces a culturally imposed distaste for essential (operational) kinds of work in a developing technological society. Thus, despite many efforts at promoting polytechnic education, both industrial and agricultural schools often remain undersubscribed as a function of their low social status. Although the heavily industrialized areas are showing greater success with practical curricula and work-study plans, only a very minor dent has been made in the vast shortage of skilled workers and foremen so essential to the development of an expansive industrial base. And agricultural development, one of the key needs of the region, grows at a sluggish pace due in large part to the shortage of trained technicians and farm operators.

To a great extent the schools of Latin America may be viewed as a vestigal-feudal routing agent, which overtly or covertly teaches children not to aspire to greater educational attainment unless they are of the proper social position.[16]) Secondary education comes at that crucial time when the child is becoming really aware of his social reality and vocational possibilities. And without a real opportunity to go on into the kind of education that can help fit the individual into a meaningful and productive place in society, the long run direction of primary education is often lost. Irrespective of potential or capability, the traditional curriculum is not satisfying or meaningful to most people of simple background.

Frequently even literacy begins to fade just as their awareness grows with respect to their lack of skills and inability to overcome educational, social, and technological barriers to employment. Neither can the lower class man or child (who are the vast majority in Latin America) afford the luxury of a pedantic treadmill, nor can he afford the tuition fees or hidden costs of what is in name a free secondary educational system. Equally noteworthy is the awakening of the children of the privileged classes, who are beginning to rebel against the stultifying routine of passive learning that goes under the guise of "humanistic education."

On the quantitative side, as a function of the tremendous population explosion in the region, enrollments of children (percentagewise) at secondary age levels have barely risen from their low levels – in some areas less than 10 percent of youngsters 11–17. Fewer than half of the applicants may be selected for entrance into secondary schools due to lack of spaces and the artificially high admission examination requirements. Yet, frequently the public schools operate on two, three, and four shifts per day, based on an accelerating trend toward the false economy of shorter school sessions. The schools, in turn, are generally lacking in vital equipment and upkeep; even in the urban areas, libraries, laboratories, and other educational necessities are noticeable by their absence.17)

In the face of a beginning trend toward comprehensive schools in some Latin American countries, there has been little real movement toward changing or modernizing teacher training, which is perhaps the key to the internal blockage of the educational systems. All too frequently the schools are in the hands of untrained administrators, who may be simply political appointees, while the teachers commonly can offer only fragmentary service to education. Low pay, low status, and poor training reinforces the role of the secondary teacher as a part time lectureship, and the absence of an organized and potent teacher organization or movement both leaves the classroom ranks splintered and helps keep education removed from the essential and practical (political) realities of professional and intellectual growth.

Given these kinds of conditions, educational critics have begun to respond with cautious warnings or with varying degrees of scepticism about the possibilities for change. Some have concluded that a school system is inherently a conservative institution that is strongly resistant to restructuring; and a few feel that the educational system can lead only to a widening of the gap between those who manage to obtain the advantage of a formal education and the majority who don't. For despite even a tripling in the number of schools, such has occurred in some places in only ten years, the number of graduates and the percentage of children served thereby is relatively small. Often an increase is but a function of politically sensitive demands from small and status conscious middle and upper classes, rather than symptomizing any general upward mobility. As one of the most incisive critics puts it, even given optimum conditions it is impossible to provide enough schools in the foreseeable future for but a simple majority of youngsters in Latin America. The enlargement of the traditional school system, "has built a narrow bridge across a widening social gap. As the only legitimate passage to the middle class, the school restricts all unconventional crossings and leaves the underachiever to bear the blame for his marginality."18)

Nevertheless, while it can be agreed that the enrollment crisis in Latin America cannot be met by the traditional structure of formal education, there remains the question as to whether future attempts at change and growth need be as futile as past efforts might seem to indicate. For one thing, systematization is inevitable in any alternative educational approach if chaos is to be avoided and if only because intellectual endeavor, even in its broadest sense, inevitably demands a structuring. The problem is not simply one of doing away with "the system". But even more important to resolution of the puzzle is the need to recognize the fact that past efforts to change the educational system have been thwarted not by any inherent hopelessness associated with educational change, but because the main attention has been concentrated on paper planning and interminable data gathering; the obsession with statistical exercises and voluminous studies has drawn the educational planners away from the implementational stages of development and those qualitative aspects of teaching, learning, and school-community relations which must form the core of any effective attempt at educational change. As Coombs has so aptly put it, "Establishing a really effective process of educational planning (as against drawing up paper blue-prints which fail to get implemented) has turned out to be more difficult and time consuming than many had imagined... It is now generally realized that unless educational planning is made an integral part of the whole managerial process of decision-making and implementation, it produces more frustration than positive results.19)

Thus the key to the problem lies in effectuating an educational system that is very much elastic – one that incorporates a diversity of practical and theoretical experiences so that the interests and development of the individual, the school, and the community are intimately linked. The very people (teachers, parents, students, administrators, employers) who must bear the real burdens associated with implementing a plan must be consulted, and certainly not be among the last to hear about development programs. Further, all persons involved in educational change must face the reality that innovation cannot be much more than an academic exercise or a frosting unless the educational process and program is made to relate directly to the development of the community. For when community involvement builds around the school, not only does education reach a productive take-off point, but the resulting pressures can cause politicians to move mountains.

Conclusions and Program

The aim of the Alliance for Progress, with its potentially powerful arms of technical assistance, is the development and support of institutions necessary for democratic social, economic, and political growth and development. Yet, over the years there is evident a reluctance to face the basic issues of social change and a tendency to look to administrative solutions of social problems. Nevertheless, some positive currents of change in the technical assistance picture are now very much apparent. For one thing a new or rejuvenated breed of planners have begun to bridge the chasm that results from looking at the developing world through separate lenses of education and economics. And overall there is much more money available for educational programs and more interest in the middle schools as a key artery of social change. Of course, any quantitative gains over the static patterns of the past will show as a fantastic advance on the showcase charts. The really big question that hangs over the heads of the planners is whether the seeds of reform will take root and be properly nourished so as to effect the very structure and flow of social action.20)

Given the commitment to change of the Punta del Este Charter, the issue is one of method and approach. It is apparent that no patchwork program will suffice to meet the needs, and that education must be made an integral part of and a key to overall development planning. Thus, several concrete steps directed toward the production of an effective program of educational-technical cooperation emerge as practical possibilities.

Clearly the most pressing need is for assistance programs geared to the development and institutionalization of native forms of comprehensive schooling, particularly at the secondary education level. In some parts of Latin America initial moves have already been made in this direction, but it is as yet much too early to evaluate the quality of these beginning efforts. This kind of innovation calls for truly free public education in middle schools that offer a core of industrial and practical arts courses of a general nature; at the upper grade levels there would be allowance for greater specialization within a broadened curriculum and for horizontal mobility across curriculum tracks. As a result the enormous wastage in investment and loss of talent that derives from the low status of specialized technical schools, and the fantastically high and early drop-out rates of the traditional schools would be brought under reasonable control. The greater social mixing within a diversified curriculum allows for greater individual motivation and development as well as a more equal and honest apportionment of educational chances among the various sectors of society. Too much the middle schools are but preparatory to the eventual grinding out of a miniscule number of professional degree holders whose aim is a socially required passport to managerial jobs in government and business bureaucracies.

Priority development of demonstration type comprehensive schools in Latin America should be sufficiently backed by outside assistance to establish enough schools to set a pattern of continuing innovation, and multiplication through imitation. The enlargement of foreign assistance should be tied to the requirement of greater national investment in education. This investment as well as the challenges to planning will be very great, but frankly there is no real alternative if we are to be serious about development. In the patterning of the schools lies the key to social and economic dynamics, and thus, in order to effect a viable integration between school and community and reach the take-off point, the following aspects of programming need primary and continuous attention:

1. The structure, philosophy, and direction of teacher training in most parts of the region must be overhauled and modernized in line with the needs of comprehensive education. Not only must training aim at breaking the common emphasis on lectures and rote memorization, but teachers must be awakened and made sympathetic to the need for greater flexibility and innovation in the areas of curriculum and student guidance. Teacher training is perhaps the major stumbling block to educational reform, if only because academic faculties controlling training frequently are unaware of or unconcerned with the drop-out rates and curriculum petrification. Indeed, traditional selective education commonly is defended as a positive value, while the relationship between education and development and modern advances in the fields of learning and inductive pedagogy are frequently overlooked or ignored.

2. Concomitantly, a system of continuing in-service training must be implanted to reinforce progress toward modernization. Initially, key personnel in education should be offered the opportunity for study at overseas facilities which provide leadership in curriculum reform and administration and training – and which offer field experience in compre-

hensive schools. Most teachers should be trained in their own country, including national training centers which could be specially developed as centers for reform. In fact, technical assistance should aim at attaching a demonstration-laboratory type comprehensive school to the faculty responsible for teacher training in as many of the universities as possible. This would help to establish a sense of identity with and responsibility for the problems of the secondary schools.

3. Educational planning must provide for sufficient upgrading teacher salaries so as to attract more competent people into service and to begin a trend toward full time teaching in one school. At the same time encouragement must be given to the development of strong professional teacher organizations to provide tone and leadership to educational change and an aura of pride to the profession.

4. Two years of teaching service in rural areas should be made a requirement for tenure or salary upgrading. Some teacher preparation (perhaps of the intensive, short-course variety) and at least one year of social service work should be made a part of the regular graduation requirement for all university students, regardless of field or area of concentration. In this way many fine people will be attracted into the teaching profession, while all will be programmed for some vitally needed service. This will also serve to bridge the gap between theory and practice so common in Latin American education.

5. Each comprehensive school should become the base for several community development projects each year. These should enlist students, teachers, and the public in concentrated efforts aimed at the bettering of communication between school and community, and positive improvement in some area or service (e.g. health and sanitation; improved library facilities).

6. The location and entrance requirements of the comprehensive schools should be carefully planned to insure a reasonable social mixture of children; promotion examinations should be carefully tested for validity in line with school objectives, and examinations in general should accent a diagnostic rather than a purely selective bent. Financial aid should follow a talent search for highly creative children of impoverished homes.

7. Especially during the take-off phase, experienced foreign teachers could be encouraged to make a significant contribution to the development of comprehensive education. A voluntary service corps of teachers from various nations, for example, could offer invaluable assistance in training, teaching, and school service areas normally short of qualified personnel. Certainly they could do much to assist in the development of community-related and other special activities for young people.

8. Curriculum re-development and localization of schools should be an integral part of urban and regional development designs. These plans should aim at breaking the cycle of economic and intellectual stagnancy of dead-end towns which have little possibility of providing a physically healthy environment and a viable economic future. Investments in planned new cities would invigorate long range educational development, open up new areas and new frontiers, and, in the building process itself, offer new hope and new perspective through active involvement of large numbers of people in a total process of change.

Although secondary education is not the only area of needed reform in Latin America, it is one of the most vital areas for technical assistance. Inevitably, pressures stemming from a polytechnicized general education development at the secondary level will force changes in direction at both higher and lower levels of education and in other sectors of the economy and society. Of course, change will require major renovation and restructuring of laws and administrative organization, and agonizing breaks with custom and tradition. For the planners there is the constant imperative to generate deliberate speed toward basic social change; to be less concerned with counting educational products and more involved with the quality, direction, and implementation of educational reform.

"So long as man imagines that he cannot do this or that," wrote Spinoza, "so long is he determined not to do it: and consequently, so long is it impossible to him that he should do it." Therein lies the paradox of education, development, and social change in Latin America.

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PROBLEME UND PERSPEKTIVEN DER TECHNISCHEN HILFE FÜR LATEINAMERIKA

von IRA J. WINN, Los Angeles

Die eigentlichen sozialen und kulturellen Auswirkungen der technischen Hilfe sind in Lateinamerika erst nach langen und enttäuschenden Erfahrungen besser erkannt worden. Dabei hat sich das Erziehungswesen in zunehmendem Maße als Schlüsselfaktor für Veränderungen erwiesen, und mit der Gründung der Allianz für den Fortschritt wuchs die Erkenntnis der dringenden Notwendigkeit, den Aufbau demokratischer sozialer Einrichtungen zu fördern. Trotzdem ist die Planung in ihrer Zielsetzung oft eher begrenzt als auf die allgemeine Entwicklung des Erziehungswesens ausgerichtet und wird mehr oder minder von marktorientierten Grundsätzen beherrscht. Das Ergebnis war, daß man die offene Auseinandersetzung mit den grundlegenden sozialen und erzieherischen Problemen dieser Regionen vermied.

Fehlplanung drückt sich in der mangelnden Förderung des allgemeinbildenden Sekundarschulwesens und der verstärkten Heranbildung beruflicher Fachkräfte und technischer Spezialisten mit verhältnismäßig hohem Ausbildungsstand aus. Es dürfte jedoch erwiesen sein, daß ohne eine beträchtliche Ausdehnung des allgemeinbildenden Sekundarschulwesens keine Grundlagen für eine Erweiterung der Märkte und der Produktion gegeben sind. Schlimmer noch, es fehlt jenes zur Erweiterung der Horizonte und mit Hinblick auf die Empfänglichkeit für Veränderungen entscheidende Element, das Gefühl aktiver Teilhabe an der Entwicklung, das den Aufbau einer demokratischen Ordnung zu einem lohnenden Ziel macht. Das Unvermögen, die Kluft zwischen Primarschule und Universität zu schließen, ist der entscheidende Grund für das Fortbestehen der sozialen Gegensätze in Lateinamerika. Eine gut geplante Förderung der Entwicklung des allgemeinbildenden Sekundarschulwesens würde sich auf alle Zweige des Erziehungswesens belebend auswirken. Diese Region bedarf dringend eines Vorstoßes zur Einführung einer gesamtschulartigen Schulstruktur (*comprehensive schooling*). Dies würde eine Modernisierung der Lehrpläne und eine vernünftige Kontrolle des alarmierend hohen Prozentsatzes von Schulabgängern bewirken, die heute die Investitionen für das Bildungswesen zunichte machen und einen enormen Begabungsverlust darstellen. Eine derartige Entwicklung würde auch eine Reform der Lehrerbildung im Sinne einer Neubewertung des Verhältnisses zwischen Schule und Kommune sowie eine Überprüfung unangemessener Lehrmethoden nach sich ziehen. Darüber hinaus würde die kulturell bedingte Abneigung gegen die meisten handwerklichen Berufe einer sich entwickelnden technologischen Gesellschaft keinen Rückhalt mehr im Erziehungssystem finden. Gewisse Fortschritte im Hinblick auf Einführung einer gesamtschulartigen Schulstruktur lassen sich aus manchen Entwicklungstendenzen ablesen, aber meistens sind diese Bestrebungen nicht wesentlich über das Planungsstadium hinausgediehen. Dies ist auf eine Reihe von Faktoren zurückzuführen: Unzureichende Verpflichtung gegenüber einer auf die Erziehung des gesamten Volkes ausgerichteten Bildungskonzeption, Mangel an Erfahrung bzw. geschultem Können oder entsprechend vorgebildeter Leitung, Fehlen von pädagogischen Berufsorganisationen und entsprechender Führung sowie politische Gegensätze. Quantitative Aspekte der Bildungsplanung sind bisher eindeutig überbetont worden und der qualitativen Seite des Erziehungswesens sowie ihren Auswirkungen ist zuwenig Beachtung geschenkt worden.

Pläne sind in dieser Region geradezu zu Fetischen geworden. Als Alternative wird ein Programm für qualitative Verbesserungen des Erziehungswesens entwickelt und Bildungsplanern, Erziehern und der Öffentlichkeit zur Diskussion gestellt.

PROBLEMES ET PERSPECTIVES DE L'ASSISTANCE TECHNIQUE POUR L'AMERIQUE LATINE

par IRA J. WINN, Los Angeles

Après de longues expériences décevantes, on se rend compte de plus en plus en Amérique latine des répercussions sociales et culturelles de l'Assistance technique. L'éducation a reçu en apparence le rôle de facteur primordial de changement, et avec la fondation de l'Alliance pour le progrès, on reconnaît de plus en plus la nécessité urgente d'encourager la création d'institutions sociales démocratiques.

Cependant la planification des programmes est souvent étroite et elle ne vise pas assez au développement général de l'enseignement; elle est quelque peu dominée par une philosophie tournée vers le marché. Le résultat a été qu'on a manqué de faire face aux besoins réels et fondamentaux de cette région dans les domaines social et éducatif.

Cette mauvaise orientation se réflète dans le peu d'intérêt que l'on a consacré à

l'enseignement secondaire en général, et à l'importance que l'on a attribuée à la formation d'experts et de spécialistes qualifiés. Cependant, on devrait maintenant comprendre que sans développement important au niveau de l'enseignement scolaire, il n'existe aucune possibilité à augmenter les marchés et à accélérer la production. Fait bien plus grave encore, il manque cet élément vital qui consiste à élargir les horizons et à accepter l'idée de modifications (c'est-à-dire le sentiment d'une contribution active au développement) qui fait de l'expansion démocratique un but vraiment valable. C'est en fait l'impossibilité à combler le fossé entre l'école primaire et l'université qui contribue le plus à renforcer les différences sociales en Amérique latine.

Un effort bien conçu tendant, d'une façon générale, au développement de l'enseignement secondaire produirait d'excellents effets sur tous les niveaux de l'enseignement. Cette région aurait absolument besoin d'être "poussée" pour pouvoir introduire une structure scolaire polyvalente (*comprehensive schooling*). Cette solution permettrait la modernisation des programmes d'études et un contrôle raisonnable du taux alarmant des échecs qui anéantissent les investissements et qui représentent une perte considérable de talents. Un tel développement amènerait aussi une réforme dans la formation des enseignants, dans le sens d'une réévaluation des rapports entre l'école et la société, et permettrait aussi un examen des méthodes éducatives inadéquates. De plus, l'aversion pour la plupart des professions manuelles – provoquée par la culture – et qui se manifeste dans une société en pleine expansion technologique ne serait plus encouragée par le système scolaire.

On remarque certaines tendances vers l'introduction de cette structure scolaire polyvalente (*comprehensive schooling*), mais la plupart d'entre elles ne dépassent pas le stade de l'élaboration. Ceci est dû à un certain nombre de facteurs, parmi lesquels il convient de signaler: les engagements insuffisants dans l'enseignement de toute la population, le manque d'expérience, de compétence technique ou de direction, l'absence d'organisations professionnelles pédagogiques, ainsi que l'existence d'une instabilité politique. En fait, on a sur-estimé les aspects quantitatifs de la planification de l'éducation, et on a prêté trop peu d'attention au côté qualitatif de l'enseignement, et à ses effets. On pourrait presque dire que les plans dans cette région sont considérés comme des fétiches.

Comme alternative, l'auteur présente un programme visant à l'amélioration de la qualité de l'enseignement et il le soumet aux responsables de la planification, aux éducateurs et au public.

NOUVELLES TENDANCES DANS L'APPRECIATION DES TACHES DE L'ENSEIGNEMENT ELEMENTAIRE

par WINCENTY OKOŃ, Varsovie

1. Rapport entre cours propédeutique et cours académique

Tandis que les représentants de "la nouvelle pédagogie" ou de "la pédagogie de culture" (*Kulturpädagogik*) ont tenté de délimiter clairement le domaine central de l'enseignement élémentaire et de lui opposer l'enseignement académique du 2° et du 3° degré de l'école, on peut aujourd'hui parler d'efforts qui consistent à mettre en évidence les rapports entre les programmes d'études des différents degrés scolaires et même de tentatives visant à éliminer les limites entre ces programmes.

On peut même constater les traces de ces tendances dans les programmes d'études actuellement en vigueur dans les écoles en Pologne et qui se basent sur la réforme de 1961. La disproportion évidente entre les programmes d'études pour les classes 4 et 5 a provoqué chaque année une nette augmentation des échecs parmi les élèves de la 5° année. Les enfants de la 4° année, à qui un enseignement était habituellement dispensé par un seul professeur, et qui en sortaient sans peine avec leur matière, furent souvent incapables une fois en classe 5 – et surtout dans les centres d'écoles mieux organisés (similaires aux "*Mittelpunktschulen*" allemandes – note du traducteur) de comprendre les matières obligatoires que leur posaient de nombreux professeurs des différents cours. Dans le but d'éviter cette difficulté, on a dans les nouveaux programmes d'études, introduit un "passage à différents niveaux" entre le premier et le deuxième degré scolaire. C'est ainsi que l'on a réparti le passage sur les "seuils" qui séparent les classes 3 et 4, 4 et 5, et 5 et 6 1). De cette façon, on a déchargé quelque peu la classe 5 (et l'enseignement academique de nouvelles matières, telles que la géographie et la biologie, n'a été en même temps introduit qu'en classe 6. Cette solution s'oppose cependant à la tendance qui s'est manifestée ci et là et qui consiste à commencer l'enseignement académique plus tôt. C'est pourquoi les futurs réformateurs de nos programmes d'études se pencheront en tout premier lieu sur les problèmes relatifs aux modifications de programmes dans les classes 1 à 4, pour que les élèves soient déjà dans les classes 3 et 4 suffisamment préparés à l'enseignement académique. Dans ce but, il faudra utiliser au maximum les capacités intellectuelles des enfants, et en même temps, lier constamment les connaissances avec les techniques, l'orientation avec l'action, et la théorie élémentaire avec la pratique correspondante. Il n'est pas exclu que le "passage à différents niveaux" réparti sur les classes 3 à 6 ne sera pas seulement maintenu, pour ne pas surcharger la première année du premier degré, mais aussi parce que toutes les matières des cours ne présentent pas les mêmes difficultés aux enfants. On essaie de libérer l'enseignement élémentaire – qui d'après une conception moderne revêt le caractère d'un cours propédeutique – de la tare d'un infantilisme exagéré, qui l'a affecté depuis des décennies. Le cours propédeutique ne peut cependant pas être considéré comme une négation de l'enseignement académique, mais bien plutôt comme une introduction dans ce dernier et comme une préparation valable à celui-ci. Il doit être une préparation, vu qu'il donne aux enfants une première orientation dans la réalité de la nature, de la société et de la culture qui les entourent, et leur fournir aussi les techniques appropriées qui leur sont indispensables pour apprendre les éléments les plus importants du savoir humain, et pour exercer une influence sur la réalité de la nature et de la société. Les rapports entre le cours propédeutique et le cours académique doivent être souples. Les élèves peuvent être initiés à certaines matières plus tôt et à d'autres plus tard, dans ce cours académique. Cela dépend du caractère des matières, de leur degré de difficulté, et de la nécessité qu'il y a à ce que les enfants les comprennent plus tôt. On ne devrait en tout cas pas commencer le cours académique avant d'être sûr que les enfants ont été préparés suffisamment, en ce qui concerne les matières, les connaissances et les techniques.

2. *Modifications relatives au caractère de l'enseignement élémentaire*

L'enseignement élémentaire est considéré habituellement comme une forme particulière de la préparation à l'enseignement académique du 2° et du 3° degré scolaire. A une telle conception correspond le terme: cours propédeutique. La propédeutique de l'enseignement élémentaire se conçoit d'habitude de la façon suivante, à savoir qu'elle doit servir à développer toutes les compétences et techniques nécessaires, avant de commencer l'enseignement académique. G. Lombardi-Radice 2) a très bien compris cette tâche, lorsqu'il prétend que le développement des techniques expressives, telles que l'échange d'idées écrites ou verbales, le dessin, le chant, le travail manuel, l'exercice physique, constitue le contenu fondamental de l'enseignement élémentaire.

Cette opinion est également partagée par S. Hessen 3), qui dans son livre: *Struktura i treść szkoły współczesnej* (Structure et contenu de l'école contemporaine) a caractérisé d'une façon remarquable les trois degrés de l'enseignement tels qu'ils existaient extre les deux guerres mondiales. Il présumait que la tâche de l'enseignement élémentaire consiste à préparer les enfants à l'enseignement académique. Cependant cette préparation consiste seulement à développer des techniques élémentaires, c'est-à-dire parler, lire, écrire, compter, chanter, dessiner et faire des travaux manuels, par conséquent certaines réalisations expressives. Cette préparation doit aller de pair avec le développement des expériences qui sont liées pour l'enfant à l'introduction "aux problèmes fondamentaux élémentaires", cependant, ce ne sera que l'enseignement académique qui fournira les réponses appropriées à ces problèmes fondamentaux. Ces contenus traités d'une manière plutôt émotionnelle qu'intellectuelle doivent, d'après Hessen, se présenter pendant les deux ou trois premières années sous forme d'enseignement global, hors duquel se développeront progresivement les différentes matières.

Cette conception des tâches de l'enseignement élémentaire constituait dans la période entre les deux guerres mondiales un phénomène général, et elle représente encore aujourd'hui un principe didactique reconnu universellement. Dans son livre intitulé *Developmental Tasks and Education* paru en 1948, Robert Havighurst 4) qui part de conditions tout à fait différentes de celles des pédagogues mentionnés, constate également que développer les compétences et les techniques élémentaires constitue la tâche principale de ce degré scolaire. Il a été certainement influencé par le progressivisme et le naturalisme de Dewey, lorsqu'il examine ce problème du point de vue de l'enfant et de ses besoins.

La pratique d'enseignement dans beaucoup de pays est basée sur des principes similaires à ceux formulés par Hessen. C'est ainsi, par exemple, qu'en Pologne, les tâches de l'enseignement élémentaire dans les programmes d'études ont été définis de la manière suivante:

> "Dans les classes 1 à 4, les élèves se familiarisent avec les connaissances de base sur le pays, la nature et la vie sociale; ils apprennent à lire et à écrire, à résoudre des problèmes élémentaires d'arithmétique et à se servir d'instruments et d'appareils simples; ils s'habituent à observer les règles d'hygiène, et à développer leurs capacités physiques. C'est ici que se développe aussi le sentiment de réceptivité de l'enfant pour la beauté de la nature, l'esthétique de la vie quotidienne et que s'éveillent ses intérêts et capacités pour l'art plastique et la musique. Les connaissances, techniques et habitudes acquises durant ces quatre premières années représentent la base de l'enseignement des classes 5 à 8 de l'école primaire" 5).

Dans ces principes qui viennent d'être formulés, on reconnaît la tendance à organiser d'une façon plus harmonieuse les tâches de l'enseignement élémentaire, c'est-à-dire d'y inclure non seulement les techniques, mais aussi les connaissances systématiques qui ne sont traitées que très brièvement d'ailleurs, dans le domaine de ces tâches.

Ces dernières années, cette tendance a commencé à s'intensifier aussi bien en Europe – et surtout en Union Soviétique, en Allemagne de l'Est et en Roumanie – qu'aux Etats-Unis d'Amérique. Elle correspond, en principe, aux conditions psychologiques de l'enseignement élémentaire mentionnées ci-dessus. Cette conception a trouvé son expression la plus marquante dans les travaux d'un groupe de psychologues soviétiques, et en particulier, dans les expériences scolaires d'Elkonin, qui se basent sur les mêmes principes. D'après ces psychologues (P. Galperin, A. Zaporozec, D. Elkonin, V. Davydov), l'action de l'enfant est règlée par le réfléchissement psychique des données de son milieu, et s'il s'agit de l'enseignement, par des modèles, de ce qui doit être fait et comment. Dans cette action, il faut distinguer deux attitudes différentes chez l'enfant: l'orientation et l'exécution, où l'orientation joue le rôle principal lors de l'action. Le jeu de plusieurs facteurs selon lesquels l'enfant dirige ses actions, constitue d'après P. Galperin 6) la base d'orientation de son action.

C'est pourquoi, nous n'avons pas seulement affaire ici à une nouvelle façon de considérer l'enseignement élémentaire, mais bien aussi à une interprétation du processus d'acquisition des connaissances, selon laquelle les connaissances de la réalité sont le résultat de l'action qui se base sur cette réalité. D'après cette théorie, les actions se transforment selon leur structure en techniques, et finalement au fur et à mesure de leur automatisation, en habitudes. Le caractère révolutionnaire de ces conceptions ne réside pas seulement dans le fait qu'elles font entrer dans le domaine de l'enseignement élémentaire des éléments d'orientation ou simplement des connaissances de la réalité et qu'elles concèdent le rôle essentiel non pas au rendement, mais à l'orientation, et aussi dans le fait qu'elles introduisent des éléments de l'enseignement académique dans ce domaine et éliminent ainsi en même temps une des différences les plus marquées jusqu'à présent entre les 1° et 2° degrés scolaires. Après de nombreuses recherches, ce groupe de psychologues est parvenu à des conclusions qui semblent justifier les recommandations suivantes:

a) éliminer le domaine central et fermé de l'enseignement élémentaire et établir dès le début de l'enseignement scolaire des programmes d'études académiques;
b) activer et améliorer d'une façon définitive non seulement l'acquisition des connaissances, mais aussi celles d'une étendue beaucoup plus vaste.

Il est encore trop tôt pour juger si on peut accepter cette conception comme point de départ vers une réorganisation pratique de l'enseignement élémentaire. On ne pourra prendre une décision valable qu'après avoir évalué les résultats des nouveaux essais et expériences qui sont entrepris actuellement dans beaucoup de pays. Certains pays n'attendent cependant pas les résultats de ces expériences, mais essaient déjà maintenant de ramener l'enseignement élémentaire à trois ans. Ils partent de l'idée selon laquelle les solutions didactiques actuelles permettent une réalisation totale de ces tâches quelque peu étendues pendant les trois premières années scolaires.

3. *Le problème des connaissances dans l'enseignement élémentaire*

Le problème le plus complexe d'une réforme de l'enseignement élémentaire est sans aucun doute celui du choix des matières convenant à des enfants de l'âge atomique. Jusqu'à présent, on n'a pas pu trouver une solution à ce problème susceptible de contenter les représentants des différentes conceptions pédagogiques, et de devenir la base du programme d'étude pour ce niveau scolaire. De plus, les représentants de la même conception pédagogique ont présenté des solutions très différentes les unes des autres. C'est ainsi, par exemple, que les partisans de John Dewey, le fondateur de la "nouvelle pédagogie", se sont séparés de lui lorsque celui-ci, en s'appuyant sur la théorie de Haeckl, insistait pour que les enfants dans son "*Laboratory School*" exerçassent toutes les occupations productives qui intervenaient l'une après l'autre dans l'histoire de la société humaine 7). C'est pourquoi Kilpatrick 8) introduisit dans l'école des projets relatifs à la production et à la consommation, et les problèmes et les techniques y afférant, en y ajoutant encore des éléments du milieu des élèves. Decroly 9) limita une fois de plus les possibilités d'une différenciation selon le milieu et choisit à la place des contenus qui devaient permettre l'éducation d'un "citoyen international" qui met son propre bien-être au service de l'humanité; Linke 10) enfin s'efforça d'inclure dans ses "*Lebensmilieus*" les phénomènes principaux de la nature et de la société; et Freinet 11) qui – comme Decroly – considérait moins le côté des capacités intellectuelles, soumit celles-ci aux fonctions productives et expressives de l'enfant. Bien que plusieurs progressistes aient consacré leur vie entière à rechercher ce niveau scolaire, ce ne fut pas un quelconque progressiste qui énonça une théorie valable sur le choix des matières à dispenser au premier niveau de l'enseignement, mais bien l'éminent pédagogue Sergiusz Hessen. Ce ne fut pas du tout par hasard; car la pédagogie progressiviste qui n'appréciait pas beaucoup l'intellect et son perfectionnement a choisi des contenus didacto-pédagogiques pour l'enseignement élémentaire, dans le but d'enrichir l'expérience de l'enfant et développer son activité. Ce ne fut non plus par hasard que les connaissances dans le système appelé "nouvelle pédagogie", se trouvaient à l'arrière-plan. On pensait que cela suffisait qu'un enfant de 7 à 10 ans acquière accessoirement des connaissances et cela, seulement lorsque ces connaissances lui étaient nécessaires pour atteindre un but quelconque; on avait cependant sous-estimé leur valeur éducative. Les représentants de la "pédagogie culturelle" (*Kulturpädagogik*) ont jugé autrement, lorsqu'ils accordèrent dans l'ensemble des valeurs culturelles une place importante aux valeurs scientifiques.

D'après Hessen[12]), l'enseignement élémentaire ne devrait pas partir d'éléments scientifiques disposés dans un ordre logique, mais bien d'éléments de la réalité qui entoure l'enfant. Ces éléments, qu'il appelle "épisodes", l'enfant doit les comprendre comme des problèmes bien à part, bien définis. Par l'introduction consécutive d'épisodes, l'enfant doit découvrir l'ensemble des problèmes scientifiques que présentent le milieu et la culture dans lesquels il est né, et s'habituer à poser des questions. Hessen ne voit la place de ce cours académique que dans le 2° degré scolaire, pour lequel le cours propédeutique-épisodique présente une préparation nécessaire du point de vue des connaissances.

Les éléments d'un système scientifique ne forment donc pas encore l'objet du cours épisodique, mais ce sont les épisodes, les "fragments" qui représentent la réalité dans laquelle l'enfant vit. Selon Hessen, la suite de l'introduction de ces épisodes dans l'enseignement élémentaire dépend avant tout du caractère du milieu, mais aussi des intérêts de l'enfant, qui se développent au fur et à mesure que se développe son orientation dans le monde qui l'entoure, et que son activité augmente. C'est pourquoi Hessen considère le "milieu régional" de l'enfant, dont quelques "épisodes" représentent les "fragments", comme le contenu essentiel de l'enseignement élémentaire. L'enseignement basé sur le milieu, appelé aussi enseignement de son pays (en allemand *Heimatkunde*, en russe *krajevedenije*) doit avoir pour objet le monde qui entoure l'enfant, vu d'un point de vue dynamique, et qui s'agrandit au fur et à mesure où l'enfant progresse dans la connaissance et la compréhension de son milieu.

Vu le caractère différent du milieu de chaque enfant et de chaque école, et surtout vu l'énorme différence existant entre certaines régions, de même qu'entre la ville et la campagne, Hessen pense que le contenu de l'enseignement élémentaire ne peut pas être "non différencié".

Cette différenciation régionale s'harmonise avec le principe de l'activité de l'enfant et de l'autonomie. Lorsque dans l'enseignement verbal, on peut s'appuyer sur la fiction d'un monde extérieur de valeur générale, le contact de l'enfant avec le milieu est absolument nécessaire dans l'enseignement concret; les différents éléments du milieu doivent former la base des activités multiples des élèves. L'enseignement élémentaire, qui doit "faire sortir" les enfants de leur propre milieu, doit partir d'éléments de ce milieu même. C'est ainsi que l'enseignement de la langue maternelle doit prendre comme point de départ le dialecte local, les contes, légendes et chants; l'initiation aux phénomènes de la nature: les plantes, les animaux, les phénomènes naturels, et les intérêts sociaux de la population de la région; l'enseignement du chant et du dessin: l'art régional, l'éducation physique: les jeux et danses folkloriques.

Ce contenu régional de l'enseignement élémentaire devrait conférer un caractère particulier à chaque école primaire compte tenu de sa situation: à la campagne, dans une petite ville, dans une région industrielle ou dans une grande ville. Dans le cadre de ce contenu, Hessen accorde aux éléments de la culture "régionale" une nette prépondérance par rapport à ceux de la nature, lorsqu'il dit que, outre la "nature locale", l'ethnographie, l'archéologie, l'hagiographie, le dialecte local, l'art, les chants et les jeux folkloriques sont ses points de départ.

Il accorde surtout une place importante au dialecte local et souligne qu'on ne devrait pas enseigner la langue littéraire par opposition à la langue régionale. Pour l'élève, la langue littéraire devrait résulter de la langue régionale; par conséquent, l'élève ne devrait pas y voir une langue qui décompose son dialecte, mais ressentir la langue littéraire comme une forme améliorée de sa propre langue. Le but de l'enseignement élémentaire n'est cependant pas d'apprendre à connaître le milieu régional. Comme dans le domaine de la langue, l'enfant doit "surmonter" son dialecte et s'habituer à la langue littéraire, il doit aussi, dans d'autres domaines culturels, sortir de la culture de son propre milieu et s'élever à un niveau de culture, c'est-à-dire la culture de son propre peuple et de l'humanité tout entière, dont la connaissance nécessite déjà l'enseignement académique. Au niveau de l'enseignement élémentaire, l'enseignement académique "encore caché à l'élève" ne devrait "apparaître qu'en épisodes".

Ces théories de l'éminent pédagogue qui ont été d'une grande actualité dans les années entre les deux guerres mondiales, ne le sont plus aujourd'hui. La nécessité de tenir compte des différences régionales dans les programmes d'études de l'enseignement élémentaire ne se trouve pas seulement en contradiction avec la nécessité d'émanciper les milieux économiquement et culturellement sous-développés; cette nécessité tient compte avant tout de la théorie des différences régionales. Elle s'oppose aujourd'hui encore plus fortement à ces transformations qui se produisent dans les différents milieux et qui sont les résultats du progrès social, du développement technique et surtout de l'influence des moyens de grande information. Les efforts d'émancipation du propre milieu favorisent une mobilisation des forces intérieures de celui-ci, qui seront dirigées vers un nivellement ou tout au moins vers un amoindrissement des différences économiques ou culturelles. Il faut naturellement que de réelles forces politiques s'associent à ces tendances pour effectuer leur réalisation. Ces forces sont chez nous particulièrement puissantes à la campagne, qui par la réorganisation socialiste ratrappe rapidement son retard séculaire.

Les conséquences ne se font pas attendre. La campagne, où l'on cultive la terre et où l'on élève du bétail selon des méthodes modernes, où l'on munit son véhicule de pneus, et où l'on roule souvent en voiture – pour ne pas parler des motocyclettes – où presque dans chaque maison vivent des jeunes qui apprennent et étudient dans des lycées ou dans des universités, où l'on s'habille de la même façon qu'un citadin – cette campagne ne présente plus "un milieu régional intact", comme c'était le cas il y a environ 30 ou 50 ans. En même temps agissent de puissantes forces extérieures qui accélèrent le processus d'assimilation de milieux négligés à la culture du peuple tout entier; elles suppriment d'année en année les grandes différences d'autrefois. Il convient ici de signaler avant tout la radio, les livres et les journaux et en fait les moyens de grande information qui pénètrent largement dans toutes les régions éloignées du pays; à ceux-ci se joint aussi la télévision dont nous commençons à compter les récepteurs par millions. Si nous ajoutons à cela les installations techniques, que l'on peut se procurer facilement, telles que tourne-disques et enregistreurs, en plus du réseau de plus en plus dense de cinémas et de théâtres, favorisé par des théâtres et cinémas ambulants, et avant tout le développement prodigieux des liaisons postales, ferroviaires et routières – alors on comprend que sous la pression de ces moyens techniques, même les milieux qui sont restés pour la plupart sous-développés, doivent se transformer et modifier leurs besoins et leurs idéaux culturels. Le paysan ou l'ouvrier qui conduit un tracteur, qui circule à motocyclette, qui possède chez lui un appareil de télévision ou une machine à laver, ne peut plus se servir de son dialecte, parce que tout d'abord les expressions dialectales pour ces appareils ou leurs pièces lui font défaut et parce qu'ensuite, il éprouverait des difficultés lors de l'achat de pièces de rechange qui doivent avoir une désignation commune dans la langue.

Sous ces conditions qui subissent et qui subiront chaque année de nouvelles transformations, il serait difficile d'accepter une différenciation régionale des contenus comme principe fondamental de l'enseignement élémentaire. Tout au plus, devrait-on continuer à développer l'éducation préscolaire et ici il faut donner entièrement raison à M. Falski 13) – dans les régions du pays où la population utilise encore un dialecte local, et d'inclure au moins dans cette éducation préscolaire les enfants de 5 à 6 ans pour les préparer à temps à l'école. Dans tout le pays cependant, on devrait favoriser de bonne heure et de façon générale l'entrée à l'école maternelle, ce qui permettrait de "compenser" déjà dans l'année préscolaire, les carences constatées chez certains enfants.

Sous ces conditions, des voix de plus en plus autorisées se font entendre pour que les connaissances de la géographie et de la culture locales, c'est-à-dire le cours sur les valeurs durables de cette culture, soient traitées comme principe didactique. Ajoutons aussi que ce principe est d'une actualité particulière dans le cours propédeutique de l'enseignement élémentaire, mais qu'il mérite aussi d'être considéré au deuxième degré scolaire. L'acceptation d'un tel principe ne présente pas de difficulté lors de l'élaboration des programmes d'études homogènes pour tous les milieux.

Ce principe peut être appelé le principe de la différenciaton selon les milieux. Sur la base du programme d'études homogène de l'enseignement élémentaire, cette différenciation devrait consister en une "concrétisation" des programmes, qui apparaît possible et juste pour le milieu donné. Si on parle des possibilités, il faut tenir compte – comme dans les autres pays – de ce que les différents territoires de la Pologne se différencient les uns des autres, aussi bien au point de vue géographique, géologique, biologique et climatique qu'en ce qui concerne la nation, la langue, les coutumes, l'économie, la société et la politique. C'est pourquoi dans chaque région, il y a d'autres conditions à remplir pour le choix des "éléments concrets" de la géographie, de la nature et de la vie sociale pour pouvoir traiter d'une manière adéquate les contenus des programmes d'études.

En même temps, le choix des éléments du milieu devrait être effectué d'une telle manière que les problèmes indiqués dans les programmes d'études y apparaissent aussi clairement que possible, de sorte qu'ils donnent aux enfants l'occasion d'apprendre, et seulement à l'aide du matériel local, les mêmes contenus de base qui sont enseignés aux enfants dans les autres régions. Il s'agit ici de ces éléments des sciences que les élèves doivent découvrir à l'aide des professeurs dans la réalité de la nature et des hommes qui les entoure. M. Falski proposa en Pologne un projet très intéressant relatif à l'élaboration de nouveaux programmes d'études.

Selon ce projet, les classes traitent des matières suivantes:

Classe 1: Observation directe des phénomènes de la nature, aussi bien animée qu'inanimée, de même que l'observation des manifestations culturelles et de la vie humaine (famille, voisins, camarades, école).

Classe 2: Découvrir et établir la relation entre la nature animée et la nature inanimée. Observer les structures et les fonctions importantes de la vie (nutrition, respiration, sommeil, croissance) avec des exemples pris dans le monde végétal et animal. Transformations cycliques en rapport avec les heures du jour et avec les saisons, dans la nature inanimée comme dans la vie des plantes, des animaux et des hommes.

Classe 3: Variété d'espèces différentes du monde végétal et animal de la région. Initiation et observation de leur vie. Influence de l'homme sur la transformation de la nature animée et inanimée qui l'entoure.

Classe 4: Images de la nature animée et inanimée de même que celles de la vie de l'homme considérées sous différentes conditions géographiques (climat tempéré, torride, froid). Initiation à l'histoire de notre culture (outils et objets usuels, genres d'habitation, d'occupations, d'habillement). Connaissances élémentaires de la géographie et de l'histoire de la Pologne[14].

Falski considère ce programme comme un projet "provisoire"; il pense cependant que son élaboration a préparé la voie pour des recherches futures. Dans ce projet, on ne reconnaît aucune tendance, selon laquelle l'enseignement élémentaire doit se baser sur la culture régionale, et Falski souligne que le domaine des connaissances contenues dans ce programme – malgré de visibles simplifications – devrait correspondre à "l'état actuel de la science."

On peut constater des tendances similaires dans tous les pays socialistes, et aussi en Allemagne de l'Est. Actuellement, cette tendance se manifeste de manière la plus radicale en Union Soviétique. Il semble cependant que l'on ne doive pas lier le principe de différenciation selon les milieux – qui va de pair avec le principe du caractère scientifique de l'enseignement – avec la nécessité d'introduire une matière nouvelle, c'est-à-dire un cours spécial (*Sachunterricht*), séparé des autres matières qui représentent les intérêts des mathématiques et de la langue polonaise. Indépendamment de la question de savoir si les contenus de l'enseignement pris des phénomènes de la nature et de la société qui entourent les enfants, constituent une seule matière – comme Falski le propose – ou s'ils sont séparés en deux matières – comme c'est le cas dans plusieurs pays – ou s'ils sont liés à l'enseignement de plusieurs matières et avant tout à l'enseignement de la langue maternelle ou à l'enseignement des mathématiques – comme c'est prévu dans les programmes d'études actuels des écoles en Pologne – ces contenus ne doivent absolument pas manquer dans les programmes. La décision relative aux solutions qui conviennent le mieux à l'enseignement scolaire, ne peut provenir que d'expériences pratiques.

4. *Les techniques à apprendre dans l'enseignement élémentaire*

En supposant que la connaissance de la réalité doive être accompagnée d'expériences concernant les possibilités d'exercer une influence sur cette réalité, nous partons du point de vue qu'un équilibre et une harmonie existent entre le processus de la connaissance et l'action, et entre les connaissances, les techniques et les habitudes.

Ceux qui voient dans la formation des techniques la tâche principale de l'enseignement élémentaire, considèrent l'expression comme une manifestation de facteurs internes irrationnels, qui s'expriment dans l'action (*Kulturpädagogik*), ou comme une expression d'un comportement tourné vers l'extérieur, c'est-à-dire de la réaction sur les impulsions (*behaviorism*). La pédagogie actuelle qui ne reconnaît, ni le premier, ni le deuxième point de vue comme principe absolu, défend le rapport intégral entre la connaissance et l'action: car elle estime l'action de l'homme d'autant plus efficace si elle repose sur une bonne connaissance des objets de l'action.

L'auteur a défendu ce point de vue dans son livre *Proces nauczania* (Le processus de l'enseignement)[15], où il définit les techniques comme l'habilité à se servir, lors de l'exécution de tâches bien définies, des règles appropriées. Les techniques ainsi conçues se basent donc sur l'emploi des connaissances scientifiques comme directives pour les formes d'action, comme règles et normes qui dirigent le comportement de l'homme lors de l'exécution de certaines tâches. Cependant, pour que cela se produise, il faut reconnaître le caractère "opérationnel" dans les connaissances de notre milieu; il faut placer les élèves dans des situations telles qu'elles les obligent à appliquer leurs connaissances pour permettre ou faciliter la réalisation de ces tâches. Formuler des règles en s'appuyant sur les connaissances acquises constitue l'établissement de bases scientifiques pour les techniques. Si l'on s'appuie au cours de la formation des techniques sur les connaissances et sur les règles du comportement qui en résultent, on évitera un abus de la méthode peu efficace des "expériences et erreurs".

Les tâches de l'enseignement élémentaire, qui lient de la façon décrite les connaissances des élèves avec leur action, devraient revêtir un caractère complexe; elles devraient être également conçues d'une façon complexe par les enfants et cela aussi bien dans le sens génétique – comprenant plan, réalisation et contrôle – que dans le sens morphologique, c'est-à-dire en ce qui concerne leur structure opérationnelle favorisant la connaissance et qui contient les éléments fondamentaux du contenu dans leurs rapports mutuels. D'une façon générale, on pourrait diviser ces tâches de la manière suivante:

1) Tâches de connaissances qui servent à la connaissance directe de la réalité;
2) tâches de rendement et de techniques dont la maîtrise demande une longue pratique;
3) tâches productives qui comprennent la "fabrication" de tout ce que les enfants connaissent;

4) tâches créatives.

On reconnaît aisément que les deux premières catégories de tâches sont liées avant tout à la connaissance de la réalité, tandis que les deux dernières visent avant tout à la transformation de la réalité.

Les tâches de connaissances comprennent les éléments de l'orientation et de l'action, où celles de l'orientation dominent nettement par rapport à celles de l'action. Par son intelligence, l'enfant apprend dans l'enseignement élémentaire les mêmes domaines de la réalité que l'adulte, c'est-à-dire la nature animée et inanimée, la géographie de sa région et de son pays, les phénomènes présents et passés de la vie sociale, et finalement les produits de l'activité économique et culturelle de l'homme. A cause des traces permanentes qui s'imprègnent tôt à l'âge scolaire dans notre cerveau, l'orientation initiale dans ces domaines est d'une valeur capitale, mais toujours sous-estimée. Ces traces seront d'autant plus durables que l'on demandera à l'élève de faire des travaux pratiques en appliquant ses connaissances acquises.

Dans les tâches de rendement et de techniques, les connaissances sous forme de règles, forment le point de départ de l'action. Cependant, l'effort essentiel de l'élève se concentre ici sur l'action, qui consiste en une répétition méthodique de nombreuses activités jusqu'à leur maîtrise et automatisation partielle. Le choix et la structure systématique de ces techniques dépendent des conditions qui régissent la base de l'enseignement élémentaire. On accordera, en tout cas, une place d'honneur, aux techniques scolaires telles que: lire, écrire, calculer. Il est vrai qu'un nombre toujours plus considérable d'enfants vont à l'école avec certaines connaissances de ces techniques, mais il leur faut quand même les perfectionner et les approfondir. En même temps, on sait qu'un grand pourcentage d'enfants, et principalement ceux provenant de la campagne, sont tout à fait analphabètes au début de l'enseignement scolaire.

En dehors des trois techniques mentionnées, il y en a beaucoup d'autres qui sont liées à l'enseignement des matières principales comme par exemple, la rédaction de compositions qui résulte d'une technique développée de la langue parlée, des règles de la grammaire et de l'orthographe, les techniques de l'observation, de la mesure, du dessin d'esquisses etc. ...

Au deuxième groupe des tâches, appartiennent les techniques suivantes: mise au point de projets de travail, emploi d'appareils simples et d'installations techniques; préparation de certaines manières et "fabrication" de certains objets usuels. Les techniques artistiques ont un caractère semblable, surtout lorsqu'il s'agit de la fabrication d'objets qui représentent l'art de l'enfant. On peut mentionner entre autres: le dessin, la peinture, le collage, le modelage, le coupage aux ciseaux, mais aussi la danse, le chant, la récitation, jouer du théâtre et faire de la musique. A un groupe spécial de techniques physiques, appartiennent la maîtrise de son corps, l'entraînement physique et la coordination des mouvements. Il y a peu de temps encore, on ne prêtait pas une grande attention à ces techniques, car on sous-estimait le rôle de la culture physique dans le développement général de l'homme. Actuellement, on peut constater des tendances qui consistent à traiter ces techniques de la même façon que lire, écrire et calculer; ce qui veut dire que les notes obtenues en éducation physique entreront en ligne de compte pour le résultat final. En même temps, on introduit dans certains pays un cours obligatoire de natation et de ski. Le système mi-temps instauré en France et en Belgique va encore plus loin. Il recommande de consacrer à l'école la moitié du temps aux études, et l'autre moitié à la culture physique, au sport, à la récréation.

Il convient de signaler finalement certaines techniques de discipline dont l'entraînement commence avec l'enseignement élémentaire. Leur connaissance ne nécessite aucun effort intellectuel spécial, mais elle représente quand même un problème pédagogique important, car il s'agit ici d'habituer les élèves, dès les premières années à l'école, à respecter certaines règles de discipline, d'hygiène et d'esthétique.

Parmi les tâches de "fabrication", la transformation de la réalité est prépondérante à la connaissance de la réalité, ce qui veut dire que les techniques l'emportent sur les connaissances. Dans les formes traditionnelles du travail manuel, cette supériorité est en général trop marquante; bien souvent, on ne pense pas du tout à la possibilité de combiner les fonctions intellectuelles de l'élève avec ses activités manuelles. C'est le modèle qu'il doit aveuglément imiter ou l'instruction (qui remplace le modèle) qui dirigent l'action de l'élève. Dans l'école socialiste d'aujourd'hui, on désire que les différentes formes d'occupations pratiques et techniques n'offrent pas seulement l'occasion d'utiliser ses mains, mais aussi qu'elles occupent tout autant l'intellect, pour que les enfants soient amenés à résoudre des problèmes techniques, à projeter des travaux de matières différentes, à faire un plan de travail, à fabriquer d'une manière rationnelle le matériel et les instruments de travail en appliquant les connaissances sur les procédés techniques et technologiques, et finalement à contrôler les résultats par rapport aux plans et projets.

Dans l'ensemble de ces activités, la connaissance des lois, qui sont à la base des différents domaines de la réalité que l'élève doit transformer joue aussi un rôle important. Lorsque l'élève fait pousser des plantes sur le balcon, cultive des jardins d'école, fait de l'élevage, fabrique le matériel didactique pour l'enseignement de la géographie, prépare le modèle d'un moyen de transport quelconque ou un jouet, il doit savoir pourquoi il effectue ces tâches de production de cette façon et non pas d'une autre, et à quelles conditions son action doit correspondre, pour que le résultat ait une certaine valeur utile.

Les deux exigences mentionneés peuvent s'appliquer également aux tâches créatrices. Il est d'ailleurs relativement difficile de déterminer la limite entre les unes et les autres. D'une façon générale, elle peut être établie comme suit: il s'agit ici des produits que les enfants n'ont pas encore connus jusqu'ici, ou de modifications apportées aux produits connus des enfants, mais qu'ils n'ont pas encore rencontrées. Cette espèce de produits d'une valeur créatrice peuvent aussi bien être de bonnes dissertations, des articles pour le journal de l'école, des poèmes ou des dessins faits par l'enfant lui-même, des modèles en limon, des travaux en bois ou finalement certains travaux de caractère technique. Les manifestations créatrices collectives des enfants peuvent comprendre des activités d'une valeur artistique, des danses, des choeurs, des manifestations sportives, des expositions de travaux, etc. ...

Le grand avantage de ces activités et travaux est qu'ils donnent aux enfants la possibilité de vivre plus intensément certaines valeurs et qu'ils stimulent la motivation qui renforce la liaison de l'enfant avec l'école et avec d'autres enfants.

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NEUE TENDENZEN IN DER BEURTEILUNG DER AUFGABEN DES ELEMENTARUNTERRICHTS

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Unter dem Einfluß des Progressivismus war der Elementarunterricht jahrzehntelang von einem übertriebenen Kult des Kindes beherrscht. Daher der Infantilismus der Lehrpläne, der Lehrbücher und der Unterrichtsmethoden für die Schüler. Nach den neuen Tendenzen, die sich immer stärker in der Sowjetunion, den Vereinigten Staaten, der Schweiz, Rumänien und Polen bemerkbar machen, bemüht man sich, diesem Unterricht seine eigentliche Funktion wiederzugeben, d.h. ihn als propädeutischen Unterricht im echten Sinne des Wortes zu gestalten. Der so verstandene Elementarunterricht stellt keine Verneinung des systematischen Unterrichts dar, er ist vielmehr als Einführung in diese Unterrichtsform zu verstehen. Ziel dieses Unterrichts ist es, den Kindern nicht nur eine erste Orientierung in der sie umgebenden Wirklichkeit, sondern auch das Wissen und die Techniken zu vermitteln, die unerläßlich sind, um die Wissenschaften verstehen und auf die Wirklichkeit der Natur und der Gesellschaft einwirken zu können.

Ausgehend von diesen allgemeinen Grundsätzen, behandelt der Verfasser die Aufgaben des Elementarunterrichts, die dem Kind die Orientierung in der Wirklichkeit der Natur, Gesellschaft und Kultur erleichtern helfen. Diesen Aufgaben entsprechend darf der Elementarunterricht nicht vom Milieu des Schülers isoliert werden. So müssen auf dieser Schulstufe die Milieuunterschiede berücksichtigt werden, d.h. die Schüler sollen gewisse Grundbegriffe der Wissenschaft anhand von jeweils lokalem Anschauungsmaterial kennenlernen. Dabei handelt es sich um Grundbegriffe der systematischen Wissenschaften, die die Schüler unter Anleitung des Lehrers in der sie umgebenden Wirklichkeit entdecken sollen. Der Verfasser tritt dafür ein, daß das Kennenlernen der Wirklichkeit unter aktiver Beteiligung des Schülers vertieft werden soll, d.h. indem er lernt, auf die Wirklichkeit einzuwirken. Der Verfasser unterscheidet 4 Lernziele des Elementarunterrichts, die es ermöglichen, die Fertigkeiten der Schüler zu vervollkommnen: das kognitive Ziel: Wissen über die den Schüler umgebende Wirklichkeit, das Leistungsziel: Lesen-, Schreiben-, Sprechen-, Rechnen-, Zeichnen-, Bauen-, Turnenlernen, außerdem die auf handwerkliches und kreatives Tun gerichteten Ziele. Das Kennenlernen der Wirklichkeit bestimmt die beiden ersten, dagegen kennzeichnet das Erlernen der Fähigkeit, auf die Wirklichkeit verändernd einzuwirken, die beiden anderen Lernziele.

NEW TRENDS IN DEFINING THE FUNCTIONS OF ELEMENTARY EDUCATION

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For decades, under the influence of progressivism, elementary education has been excessively child-centred. Hence the infantilism of curricula, textbooks and methods of working with young pupils. According to the new trends, more and more striking instances of which are to be seen in Poland, Rumania, the Soviet Union, Switzerland and the United States, there is a tendency to make education elementary, e.g. propaedeutic in the true sense of the word. A propaedeutic stage of this type does not mean the elimination of systematic teaching; it is designed more as an introduction to the systematic stage. Its aim is to teach children by giving them not only preliminary guidance in their immediate environment, but also by giving them the knowledge and techniques necessary in order to be able to tackle the vast fund of human knowledge and have an impact on biological and sociological processes.

Taking this general principle as a basis, the author discusses the functions of elementary education which would make it possible to facilitate the orientation of children in the biological, social and cultural domains. According to these functions, education at school should not be isolated from the pupil's environment. Thus, at this stage in schooling environmental differences should be taken into account, which means that pupils become familiar with certain elements of knowledge through local material. Here it is the elements of systematic knowledge which pupils must discover with the help of the teacher in the immediate environment.

The author stresses the fact that this knowledge based on fact must be broadened while the pupil is active, e.g. when he tries to bring influence to bear on reality. The author distinguishes four learning goals in elementary education which would make it possible to develop and perfect pupils' abilities ("Fertigkeiten"): cognitive goals connected with knowledge based on fact, goals concerning achievement, e.g. learning to read, write, speak, count, draw, build, do physical training, etc. And then there are productive and creative goals. Knowledge based on fact is predominant in the first two categories of goals, and it is above all the ability to process it which characterises the latter two.

COMMUNICATIONS – BERICHTE – COMMUNICATIONS

SOME DEVELOPMENTS IN TEACHER EDUCATION IN ENGLAND AND WALES

In the last few years "training colleges" in this country have been changing their titles to "colleges of education" and this alteration of nomenclature is no mere fashionable switch of brand name but a public sign of prolonged re-thinking about the process of teacher production. The formation in 1947 of area training organisations, the Institutes of Education, placed the colleges in a new relationship with each other and with the universities; the extension of training from a two to a three year course in 1960 demonstrated that even in a period of teacher shortage non-graduate students were to be given a more extended and less pressurised opportunity to develop their intellectual capacities, acquire professional skills, and achieve some measure of personal maturity. The introduction of the B.Ed. degree in 1965–1966 carried the process of closer affiliation with the universities a stage further. Every college student now has a potential gown within his cupboard and the sartorial distinction between the university-department trained teacher (or untrained graduate!) and the college trained teacher will be happily blurred. Whether all the consequences of the B.Ed. degree will be equally happy remains to be seen: colleges, in tailoring courses to suit the needs of the small elite destined for graduate status, may lose sight of the needs of the majority. Nevertheless the impact of the changes so far has been invigorating. The training colleges, even before these developments, had gone far to shed their utilitarian inheritance from the nineteenth century. They were no longer second rate institutions designed to provide the elementary school system with dedicated, upright but humble purveyors of a strictly limited range of knowledge and skills. Yet, in spite of a long process of emancipation from the drearier elements in their past, in spite of the talents and vision of many of the staff and the excellence of the college product, the older image still lingered. The organisational changes cited above gave a new yet appropriate structure to a system of training which had been changing its scope and aspirations for half a century; the change in nomenclature is an affirmation of a subtler and deeper understanding of the requirements of professional education.

The pattern of teacher-preparation in this country has been transformed as a result of these deliberate innovations at a national level; it is being modified because of pressures on the system brought about by the greatly increased demand for teachers. In 1963–4 there were 54,000 students in the colleges. The *9th Report*, 1965, of the National Advisory Council on the Training and Supply of Teachers suggests that the figure for 1970–71 will be 122,000. Places for these students have to be found not only in the colleges but in the practice schools, and these schools, most of them primary, are coping with some measure of understaffing and with changes in organisation and curriculum induced by a stronger emphasis on child development and the emotional and social aspects of learning. By changes in organisation I refer to such forms of structuring as "unstreamed" classes, "family grouping" and the "integrated day" and, in curriculum, the introduction of primary school French, "modern" or "new" mathematics, junior science. Schools strenuously trying to accommodate themselves to these new educational requirements are being asked at the same time to take in a greatly increased number of students in training.

So far I have commented on the situation of the colleges of education and these for the last few years have prepared the majority of their students for primary school work. The University Departments or Schools of Education, which offer a one year course for graduate students, are also experiencing transitional stresses. Traditionally the departments trained graduates for specialist teaching in the grammar schools. Now secondary education is being reorganised on comprehensive lines and graduates are teaching not a selected élite but a cross section of children of all ranges of ability. Departments are having to rethink their courses in a salutory way so that their students will be equipped to help not only the bright sixth former but the fourth former in the *g* or *h* stream of a ten stream comprehensive. This involves a thorough-going and far from easy reappraisal of objectives and methods. Moreover, the time cannot be long delayed when policy will triumph over expediency, as it did with the introduction of the three year course, and all graduates entering teaching will be required to undergo professional training. This will immediately pose the problem of a further provision of extra student places, to be found either in the departments or newly formed schools of education, in those colleges of education which have already introduced a one year post graduate training course, or in those technical colleges which have recently included teacher education in their programmes.

Organisational innovation and the stress of rapid expansion have already brought about considerable changes in the professional training of teachers. The pattern of human relationships between college staff and students is being adapted in recognition (in some colleges somewhat belated recognition) that the latter are mature men and women. The pattern of teaching within the colleges may still be too authoritarian and too lecture based for institutions preaching the value of challenge, questioning and discovery in child learning but again there are signs that within the three year course tutorials, discussion group techniques and seminars are being increasingly employed. Even within that most traditional element in the training programme, school practice, the colleges and departments of education are trying out new approaches. Professor Tibble, writing in the May 1966 number of *Education for Teaching*, states, "We have not engaged in any serious evaluation of the purposes and methods used in this branch of our work... In general it is fair to say that in practical work training we took over a set of procedures from the Board of Education when it gave up its responsibility for running the Certificate Courses and we have continued with these largely unchanged to the present day." 1) This is substantially true, but against this picture of stagnation we must place the modifications and innovations introduced on an empirical basis by a number of colleges and departments, including, of course, the Leicester School of Education itself. Experiments in allocating students in twos, threes and fours to work as a team with a class or two classes are relieving the pressure on practice places and are providing interesting learning situations for students (though the D.E.S. circular of December 1966 suggesting that the experience should be given on first practice 2) shows a bland unawareness of the quite demanding human relationship problems involved, and the level of maturity needed by students to cope with them). The experiment of inviting certain teachers to act as teacher-tutors, sharing in the method and education courses and acting as school-practice supervisors and assessors, points to fruitful ways of improving the liaison between the schools and training establishments. 3) The roles of the student and school practice supervisor are being rethought on analogy with the training of social workers and Irene Caspari and John Eggleston have given an interesting account of an experimental situation where the students, instead of being visited in the schools, reported back to their tutors, using them as resource persons. 4) Students at the Bristol Department are meeting adolescent pupils from a local comprehensive school outside the school practice setting and are exploring under tutorial guidance the kind of learning which is involved. 5) Some colleges are trying out, under the pressure of "box and cox" systems, extended practices of a term in length. A few colleges with the equipment and technical expertise – Oastler College at Huddersfield and Avery Hill College, London, for instance, are employing close-circuit television and video tape. Educating students in the use of audio visual aids and the techniques of programming is going to be an increasingly important aspect of teacher education, requiring flexibility and willingness to restructure the teacher's role. A sign of the importance attached to these new developments was the announcement by A. Crosland, Secretary for Education and Science, at the N.U.T. Conference on March 30th 1967, of the setting up of a National

Council for Educational Technology under the chairmanship of the Vice-Chancellor of Hull University.

In a period of remarkably challenging change and flux it might be thought that research findings would offer guidance to colleges and departments on the best ways of restructuring their programmes to produce the maximum number of effective teachers. Such an expectation would be naive. The system of teacher education is changing under pressure, but, as is usual in English education, the changes are based on hunches, acts of faith and response to immediate crises. In the introduction to the *Year Book of Education*, 1963, devoted to the education and training of teachers, Brian Holmes reiterates Lieberman's plea for a "research minded profession" and suggests that it is "the task of the teacher of teachers to develop a science of education."[6]) We are a long way from this; colleges of education are not on the whole research orientated organisations. Even if they were there is little research evidence available which could be employed for guidance. The teachertraining establishments represent a virtually untouched field of enquiry. There has been some varied work done on student attitudes. K. J. Collier made a report in *Education for Teaching*, 1957, of an enquiry into student attitudes at St. Luke's College, Exeter.[7]) K. M. Evans has thrown light on this particular field in a sequence of articles extending from 1946, references to which are contained in her book *Attitudes and Interests in Education*.[8]) J. W. Tibble has written perceptively of student anxieties before teaching practice in the *Sociological Review, Monograph No. 2*.[9]) A recent article in *New Society* by George E. Dickson and William Wiersma has reported research findings which highlight certain differences between English and American student teachers, some of them unexpected; for instance, that U.S. students tend to be more learning centred, while their British counterparts are more child centred and permissive.[10]) The bulk of the work is contained in a few unpublished theses. Thimme Gouda's investigation of student attitudes towards their course of training,[11]) Steele's enquiry into changes in attitude amongst training college students towards education in junior schools,[12]) and Chamber's study of student attitudes towards some aspects of teacher training[13]) reveal aspects of student satisfaction and dissatisfaction with their courses and register some attitude changes. The most illuminating enquiry is Shipman's *Personal and Social Influences on the Work of a Teacher Training College*,[14]) which gains in richness and insight by investigating attitudes in the context of a specific college. Expectedly, the other field where some body of work has been accomplished is that of assessment and evaluation. Though the results are by no means uniform, the overall effect has been to reveal a lack of agreement as to the attributes which contribute to practice-teaching success,[15]) and little correlation between college grades and subsequent teaching achievement. The latest follow up study in this country has been carried out by S. Wiseman and K. B. Start and is concerned with a sample of two hundred and forty eight teachers who qualified at seven colleges and one university department within one a.t.o. in 1955. The comment is made that "little correlation was found between colleges assessment and the various criteria of success in the profession."[16]) Such findings are, of course, challenging and salutary, and a knowledge of the vagaries of assessment should at least lead to less agonising over the allocation of a C+ or B— grade, and at best to a serious reappraisal of the whole procedure. These enquiries and others, taken all together, however, leave the field of teacher education in this country virtually untouched.

Colleges and departments of education are functioning organisations which must evolve, provide courses and produce teachers even in the absence of adequate research guidance on which to base their procedures. They must behave as if they know which patterns of training will produce effective teachers; as if they know, in short, what constitutes effective teaching. In this area of teacher competence research offers not a dearth of enquiry but, from America, a plethora of findings. The bulk of these provide few bearings for the most research orientated organisations. Some working notion of teacher effectiveness is essential to colleges of education, but an over simplified and naive concept in research has proved singularly unprofitable. Prompted by the success of efficiency experts in the business field and by the pressures of a merit system, American researchers have produced over two thousand studies in the search for some means of defining and identifying competence. Getzels and Jackson note that the Domas and Tiedman bibliography of 1950 on teacher competence contains about 1,000 titles, and the list has grown considerably since that date. Yet as Getzels and Jackson sadly comment, "Despite the critical importance of the problem and a half century of prodigious research effort, very little is known for certain about the nature and measurement of teacher personality and teacher effectiveness."17) One of the most hopeful signs is that while supervisors, administrators and school boards in America still wish for an easily operated method of discriminating between "effective" and "ineffective" teachers, the best contemporary research on teaching effectiveness, drawn together in the book of that title under the editorship of Bruce Biddle and William J. Ellena,18) acknowledges the complexities, concedes that efficiency is relative, that a teacher may be effective in one way in one situation, in another way in another, may be effective with one group of children and ineffective with another, that efficiency may be modified by the physical, social and cultural environment in which the teacher operates and by the inescapable facts of race, sex and age. There is no need to compile a further bibliography on the topic to deal with research this side of the Atlantic. The promotion game has probably been played as strenuously here as anywhere, but since payment by results was abandoned in 1897 the rules have become very subtle, and no one would dream of thinking that objective, scientific investigation of efficiency would provide a rationale for improved salary and prospects. Research in this particular area has lacked impetus.

Yet all teacher education rests on assumptions which the educators are making as to what constitutes an effective teacher, and what kind of courses lead to this effectiveness. It is assumed in English colleges of education that the student who has followed a challenging course of study in an Advanced or Main Subject will be the more effective teacher for the experience, even if the subject – history, for instance – is not one she is going to employ directly in teaching nursery and infant school pupils. It is assumed that a student who is provided with a theoretical basis in some of the social, psychological and philosophical aspects of education will be a more effective teacher. The experience of creativity in art, music, drama, writing and dance is believed to contribute to the student's ultimate teacher competence. The assumption is made that students who spend twelve to fourteen weeks on practice teaching in the schools, usually in a distribution of three blocks of time and usually under the supervision of college staff, are acquiring some measure of teacher effectiveness. What is more, it is assumed that the level of effectiveness, both potential and achieved, can to some degree be evaluated and allocated on a five or even an eleven point scale. Assumptions are necessary if colleges are to function. Nor am suggesting that they are baseless; considerable experience, observation and expertise – as well as faith – underlie them. It is not feasible, nor would it be desirable, to investigate all our assumptions in case, like the self conscious centipede, we immobilised ourselves. But at the same time we must recognise that unquestioned and untested assumptions may be misleading – the findings on assessment make this point unmistakeably. There is an obvious need for more sustained and integrated research into teacher education, not indeed on generalised conceptions of competence, but on specific and limited enquiry into what happens in particular colleges during the training years, how, if at all, are attitudes changed and behaviours adapted, what, indeed, are the attitudes the colleges wish to sponsor, what are the most effective means of utilising the strengths and counterbalancing the weaknesses of the students with whom the college staff are actually dealing, what are the problems inherent in the delicate triangular relationship of student, school teacher and college lecturer, what conditions of school practice promote the maximum learning for students, what accounts for the phenomenon of "regression" when, after a few months teaching, the ex-student sheds much of the college acquired learning. Teacher education would be helped by research on such fundamental issues as these. It would also be helped by research which attempted some evaluation of new approaches which are under way or being conceived. Michael Young made a striking assertion in relation to the schools when he wrote that "education needs innovation more than it needs research,"[19]) but he added an important further statement regretting that research had not been incorporated from very early on in the design of reforms. This holds good for teacher training. Innovation cannot wait on research, but we need research in order to discriminate between what to preserve of our innovations and what to discard. Experiment without evaluation can ultimately become irresponsible.

There are signs of growing professional interest in research into teaching and a changing attitude manifested towards it by both teachers and lecturers. A fair number of school and college staff have worked or are engaged in working for Advanced Diplomas in Education, for the degree of M.A. in Education, or the degree of M.Ed. This enables them to have an awareness of research findings, a first hand experience of research techniques, and, through this, a sympathy towards other research enquiries. There is nothing like administering a questionnaire yourself for making you willing to fill in someone else's! Some of these attitudes and skills may be acquired by their students, so that as teachers they in turn may be interested to engage in individual and group research activities. It is significant that the Association of Teachers in Departments and Colleges of Education set up a working party of its members to enquire into school practice, and enlisted the assistance of John McLeish, who is at present engaged in research into student attitudes in the Cambridge Institute. The working party has just completed a report. Even more significantly, this professional organisation has also set up a Research Committee which has carried out a survey of all ongoing research amongst its members as a preliminary to sponsoring further experiments and investigations. In addition to a growing body of research being built up by individual research fellows or teams working within the University Institutes and Research Units, other agencies are acting as sponsors and coordinators of research enquiry. The Schools Council is engaged in research in curriculum reform which will inevitably affect teacher preparation, the National Foundation for Educational Research is engaged on a feasibility study involving a number of school staff in the neighbourhood of Slough as a prelude to a job analysis of teaching.[20]) The Research Unit in the Bristol

Institute of Education, under the direction of Alan Brimer, is at the moment carrying out two projects under contract to the Department of Education and Science. One is the investigation on a national scale of the probationary year, the other a small scale enquiry into the functions of school practice in courses of teacher education. The first is being undertaken by John Taylor and Roger Dale. Since I myself am engaged in the second undertaking I should like to conclude with some preview of this research so far.

This is a short term enquiry – the contract is for two years only – and therefore inevitably it explores the existing situation. It somewhat arbitrarily isolates school practice from other aspects of teacher education in order to provide a narrow focus. My purpose in this pilot enquiry has been to try to tease out the objectives of school practice, because only when these are specified can we begin to consider how far the objective are actually realised and what modifications in present approaches could help us to realise them more effectively. I felt from the first that it was important to use discussion and interview techniques as only through these would the more subtle human relationship problems emerge. Also, with fifteen years of teacher education behind me, I was anxious not to create instruments and questionnaires which might be based solely on my own preconceptions. With the cooperation of two colleges I arranged for a sample of seventy two students, covering the three years of training. I organised these into groups of six and held two discussions with each group. At the same time I held discussions with all the education staff and with a cross section of the subject staff of eighteen practice schools and followed up nine students from each college on their practice. Nine seems a small sample out of an entire college year. School practice, however, is a very short period – three weeks in this case. One of the problems of school practice research which involves any actual observation of the practice situation is the extremely compressed time span. The first few days of the practice and the last one are ruled out – nine or ten working days may well be all that are left. After these discussions and periods of observation I created questionnaires and instruments which were administered to one year of students in each college, to the college staff and to the staff of the practice schools. The material from these is now being processed. Of course my previous experience in teacher training and my presence as observer are all colouring the research. But at least the actual research instruments have grown out of discussion material and the observation of specific situations and have not been imposed from the outset. The findings will relate only to two years of students in two particular colleges, in one area of the country. The sample is very small. I am hoping, however, that this narrowly focussed enquiry will help to establish some of the actual objectives of school practice, what these students, school and college staff expect from the opportunities which the experience should provide. I hope, too, that the investigation will throw further light on the attitudes of students, school and college staff involved in the school practice enterprise, so that we can take conscious account of these attitudes in future planning.

One thing is certain. Neither my research nor any more ambitious enquiry or group of enquiries is going to provide an authoritative blue print for teacher education. Teacher education will change as the demands and aspirations of society change. Its health and success will depend as much on the intuitive insights of the practitioners, the prophetic vision of innovators, reformers and fanatics, and the skill, discretion and foresight of administrators as on any research findings. What research can perhaps do, however, is to confirm the intuitive insight, discriminate between the valuable vision and the dangerous illusion, provide the objective information which the administrator can use. It can act as an agency which brings together teachers, lecturers, students and researchers in a working situation which, if handled tactfully, contributes notably to their understanding of each other as well as to their understanding of the specific research problem. It can uncover tendencies, help us to clarify objectives and to ensure that change is contributing to the achievement of these objectives.

In a period of conscious innovation and of flux induced by pressure, these are vital contributions to make to the development of teacher education.

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TEACHER TRAINING FOR NORWEGIAN SCHOOLS

1. *The General Trends of Development*

Three trends can be distinguished in the course of Norwegian teacher training during the past century.

In the first place there has been a general movement from a dual system of training to a system with *greater unity and co-ordination.*

A hundred years ago a teacher would belong either to a non-privileged group trained at special "teacher schools" to teach in the "common school" *or* he would belong to the group of university-trained teachers in the preparatory and the secondary school. Today there are increasing opportunities for a teacher to combine different types of training from all teacher training institutions. It is possible to be recognised as a high level teacher after beginning training at a teacher training college and continuing at other institutions: thus acquiring more comprehensive qualifications by taking up the various types of training offered. The teacher can combine his basic teacher training with, for instance, a lower degree in English and a higher degree in music at university, and in this way, reach the highest level of qualification.

Norwegian teacher training today is also characterised by a more *balanced approach* than was formerly the case where public interest in and responsibility for the tasks of the teacher are concerned.

There has been considerable development since the time when the authorities' interest in teacher training concerned itself above all with the secondary school teacher and the teacher of classical subjects. Concern for the primary school teacher and the teacher of national and practical subjects has steadily increased. A far greater degree of balance exists between the authorities' responsibility for and awareness on the question of basic teacher training compared with training for the secondary schools. There has been a corresponding improvement in teacher training in practical and aesthetic subjects compared with training in academic subjects. The struggle for an equal share of interest still goes on, but much has been achieved in the past hundred years.

The third line of development in relation to the two outlined above is the *increased breadth of teacher training* and the research for a reasonable balance between breadth *and specialisation* in the course of training.

The development of the general school system, the inclusion of practical and aesthetic subjects in the primary school curriculum, the increase in foreign language teaching, the many additions to the curriculum including the new "vocational" subjects in schools after the period of compulsory schooling, have gradually transformed teacher training into instruction in a multitude of different subjects. The problem today is how teacher training collectively can provide preparation in all the new and old subject areas. How can teachers specialise and at the same time remain class teachers? What requirements should be made in the way of specialisation for the individual teachers?

2. *School Development in Norway up to 1970*

In the course of only a short period of time a revolution has taken place in the general understanding of the place of the school and of education in Norwegian society, and also in the understanding of what is meant by school and education. Parents want their children to have more education and young people want more themselves.

It is characteristic of the development of the school system today that a broad general training in the sciences and the humanities continues to strengthen its position in education. The same may be said of general vocational training, the preparation for a particular occupation will cover a broader field and the difference between general and vocational training will on the whole be less marked.

General education is also gaining in importance as ordinary people come to look upon it as a practical opportunity to share the cultural wealth of the community. Material well-being creates a feeling of freedom and a feeling of possibilities.

Ordinary young people no longer look on school as only a necessary piece of drudgery to gain qualifications for earning a living. School is becoming a means to development as a human being and to independence in one's occupation. Culture and society offer opportunities for a wealth of experience and insight, which can only be exploited by those who have learned to use cultural equipment and are proficient in the use of language. Such ideas may have great appeal even in circles where they cannot easily be put into words.

It has also become increasingly recognised that a high standard of general education is essential for an independent contribution to one's chosen occupation and to enable one to keep up with developments within it: the ability to adapt oneself in a rapidly changing society is needed and this quality does not depend primarily on specialised knowledge or specialised skills. What is needed is a general ability to continue the educational process, independence, a general ability to find one's bearings, general knowledge, a command of one's native language and of importance also foreign languages, which will help to become self-reliant in work and their daily life.

The complexities of society require not only a higher standard of general education, but also a broader occupational training. Developments in industry and technology mean that the individual must expect changes within his chosen trade. He will need continual training to be able to carry out the tasks his occupation involves. In addition the ordinary man or woman must be prepared to have to change job possibly several times in the course of his or her working life. Society changes so quickly that the structure of a trade or occupation may be reshaped within a short period of time and the individual must be prepared for continual re-training.

These trends compel the nation to re-think the objectives of the school system. Norway is these years constructing a compulsory basic school for all pupils from 7 to 16 years. There will also be a differentiated system of upper secondary schools offering academic and practical subjects. A special school of academic studies, the *gymnas* leads to the university or university college after a three year course (16 to 19 years). Other schools with a more practical bias prepare students for particular occupations or for entry to more advanced specialised training institutions, special technical schools, special teacher training colleges etc.

An important element in school planning today is the idea that all schools leading on from the basic compulsory school (all schools for the age group 16–19) should offer a degree of general education so that a pupil that has elected to follow a more practical or technical course of training will still be able to go on to a university college or to university for higher education after an examination in a few fundamental subjects.

In recent years many committees and commissions have been working on the question of the future organisation of the various types of upper secondary school. Their object has been to create a comprehensive system of equivalent schools and lines of study. In particular the question of breadth of syllabus, degree of differentiation and ease of transfer from one type of school to another has been prominent in the discussions. A pupil must be able to choose one type of upper secondary school corresponding to his abilities and background, knowing at the same time he can transfer to a more practical or more academic type of school if he so desires. The only requirement should be that the pupil be prepared to take a longer period of time to complete the course.

3. *The Teacher's Tasks in the School System and the Types of Teachers*

The plans for development in the field of teacher training must be seen in the context of the expanding school system. There is the question of the different types of training institutions and the problem of the specialised training for the teacher, whether of children (infant and primary levels), young people or adults.

The many different types of teaching duties in the school system are providing teacher training for about ten thousand young people each year. The speed with which the need for education is growing is so great that the total number of teachers in Norway will have doubled in a period of 10–15 years, from 30,000 in 1960 to about 60,000 in the mid-70's.

The question of *structure of the teacher training system* is a central problem in the discussion.

To correspond with the movement towards a more unified school system, teacher training is now more and more being organised as a *series of integral courses of study* which can be combined according to the needs and interests of the individual teacher. The future teacher can choose courses of study as he progresses in his knowledge of the school system and of his own abilities and interests. For many students the normal pattern is to begin with a general teacher training course, a general training for class-teaching, which provides pedagogical preparation for the tasks of the teacher and for guiding the process of education and instruction in children and young people. After a general training, the teacher can take courses in special subjects and in methods of teaching this special subject.

These courses may be short, e.g. one year's course of study of a practical or artistic subject at a special training college, or may be a one year university course. In this way, the teacher can build up a longer course of training.

The teacher may also choose to specialise at the level of the higher degree (*hovedfag*) at the university. To do so, he may take a more demanding examination after three years' study in one subject. Training of this type combined with other special studies, or as part of a total of six years' higher education, entitles him to the highest teaching qualification, and the position of *lektor*.

There is also a kind of teacher training exclusively given at the university. The candidates take a basic course in two or three university subjects followed by

FIGURE I

The Three Levels of Teacher Competence Related to the Different Types of Teachers (or Teachers of Different Types of Schools)

(*According to the Law of 1961*)

	Age *)	A. Kindergarten teachers**)	B. Teachers for the compulsory school, primary and sec. level	C. Teachers for sec. level of compulsory school and teachers for upper sec. school	D. Teachers for the vocational schools
3. Level: *lektor*	25	A main subject – 3 years study at university level may be included. At present possibilities of a main subject for this group of teachers are almost non-existent outside "general education".	A main subject – 3 years study of the subject at university level may be included and raise the level of competence to *lektor*.	A main subject at university level and the higher university degree (cand. *philol.* and cand. *reae.*) are the usual requirements before the candidate is fully competent as a teacher in the upper sec. school.	Possibilities of a main subject in a practical field are at present almost non-existent. The possibilities of a main subject for this group of teachers exist through a university college study of three years.
2. Level: *adjunkt*	23	Kindergarten teachers may raise their level of competence through one year courses to the second level, if their teacher training is based on upper secondary school or equivalent.	Two one-year courses at university college level lead to *adjunkt* level of competence.	A university study of at least four years leads to the lower university degree (cand. *mag.*) as the basis of the higher degree and leads to the *adjunkt* level of competence at the sec. level of the compulsory school.	Special vocational courses, theoretical or practical, of about two years in all.
1. Level: *laerer* (teacher) or *faglaerer* (special subject teacher)	21	Kindergarten teacher training college of 2 years is the minimum requirement and the usual level.	Teacher training college of at least two years is minimum requirement and compulsory for teachers at the primary level and usual as basis for teachers at the secondary level of the compulsory school.	A teacher training college may be the basis of further university studies and lead to *adjunkt* and *lektor* competence without a university degree.	A special teacher training college is one possibility for *faglaerer* competence. Half year seminar on education. One year training in theoretical/technical subjects. Special qualification from practical work.
Basis: upper sec. school or the equivalent	19				

*) The age is usually higher than the table shows because the candidate often has some sort of vocational work alongside his studies.

**) Kindergarten teacher training is not governed by the Law (of 1961), only commented upon in the preparatory documents and regulated according to tradition.

pedagogical training. This type of course leads to various qualifications; four years' study qualifies the candidate as *adjunkt*, while six years' study entitles him to *lektor* status.

These are the principal ways (in fact, the two are more and more similar) by which a candidate can avail himself of the training opportunities at different types of institution to qualify himself stage by stage for the particular kind of teaching he wants to do.

The student who knows from the beginning that he wants to become a teacher can begin with the basic teacher training course and proceed to further more specialised training. If he is certain, for example, that he wants to teach in the primary school, he can concentrate in his basic training towards this end and undergo further specialised training in a wider range of subjects suitable for this level of teaching, such as social sciences, or make a special study at a teacher training college of the "teaching of school beginners". Each one-year study of teacher training will count as a unit of a higher teacher qualification, (*adjunkt* or *lektor*).

The intending teacher at the upper level of compulsory nine-year school can extend his training by means of special studies in single subjects, such as foreign languages, biology, chemistry, physics etc.

The student who wants primarily to continue his studies in particular subjects, physics, for example, or history, can begin his higher education with specialised academic training. If he later wishes to be trained as a teacher, he can make further choices with this in mind. His second or third subject can be selected in such a way as to give him a rounded and balanced range for his job as a teacher. He could, for example, combine his studies in Norwegian and English, language and literature, with a third subject of a more artistic type, such as music or art and craft.

The final stage of his training as a teacher will in those cases consist of a *special course in educational theory and practice:* an introduction to psychology and methodology, school administration and special services in schools, the history of education, the development of Norwegian education, the curriculum and methodology of the chosen subjects. This type of educational training after the academic training is these years extending, probably to a full years' course.

There is also a need for a more specialised type of teacher training, that of the *special subject teacher*. The most important type of training in this field is that given in separate specialised colleges, organised on a subject basis, to train people in art and craft, domestic science or physical education. These specialised colleges require a certain standard of achievement in the subject in candidates for admission, and offer, as a rule, a two-year course leading to special subject teacher status in the appropriate discipline. Specialised teacher training of this kind can also be combined with further training at other institutions so enabling the specialised teacher to attain the higher levels of recognised qualification by means of extra studies related to his special subject.

An answer to the problem of breadth or depth of training lies in the *organisation of teacher training*.

One of the *two principal patterns* of training is the one that begins with the *basic course:* the general training for a teacher in the compulsory school. This relatively broad and general course is these years undergoing important changes as a result of current experiments and is becoming more concentrated. According to these new plans and practical experiments each candidate chooses certain subjects for special study even during the basic training. After training he will be in a position to teach at the lower primary level (7–10 years age group) covering the whole range of the curriculum, at the intermediate primary level (10–13 years) in one branch of subjects only, and at the upper primary level (14–16 years) in only a few subjects. According to a recommendation recently submitted, each teacher is also to have in addition to his basic course *one year of compulsory further training* with special reference to the particular work he is to undertake in school. The total duration of the course, including compulsory further training, will be one year longer for teachers in the upper level of the primary school (four years training) than for those at the lower and intermediate level (three years training).

The system of a *relatively broadly-based general training* course with room for *individual choice of special subjects* and for *further studies in greater depth* will satisfy many of the requirements teacher training is now expected to fulfil. It will give a broad general preparation for the duties of a teacher, especially for a teacher of young children. At the same time it will provide specialised training for teachers of older pupils. It will also promote unity in the teaching profession.

The teacher in the "secondary" school (meaning here those schools that come after the basic nine years' compulsory education in the "primary" school) needs first and foremost *specialist training* in one or, at most, two subjects, together with *educational training*. Such a teacher will, as a rule, have been trained at the university or at a university college. Teachers of practical or vocational subjects will have been trained at special institutions, or, alternatively, be experienced practitioners. It is still the usual practice for a teacher in the vocational school to conclude his vocational training with an educational course in preparation for his teaching. Nevertheless, it is also possible for him to extend his basic training as a teacher and to continue his education from his position as a special subject teacher to higher qualifications.

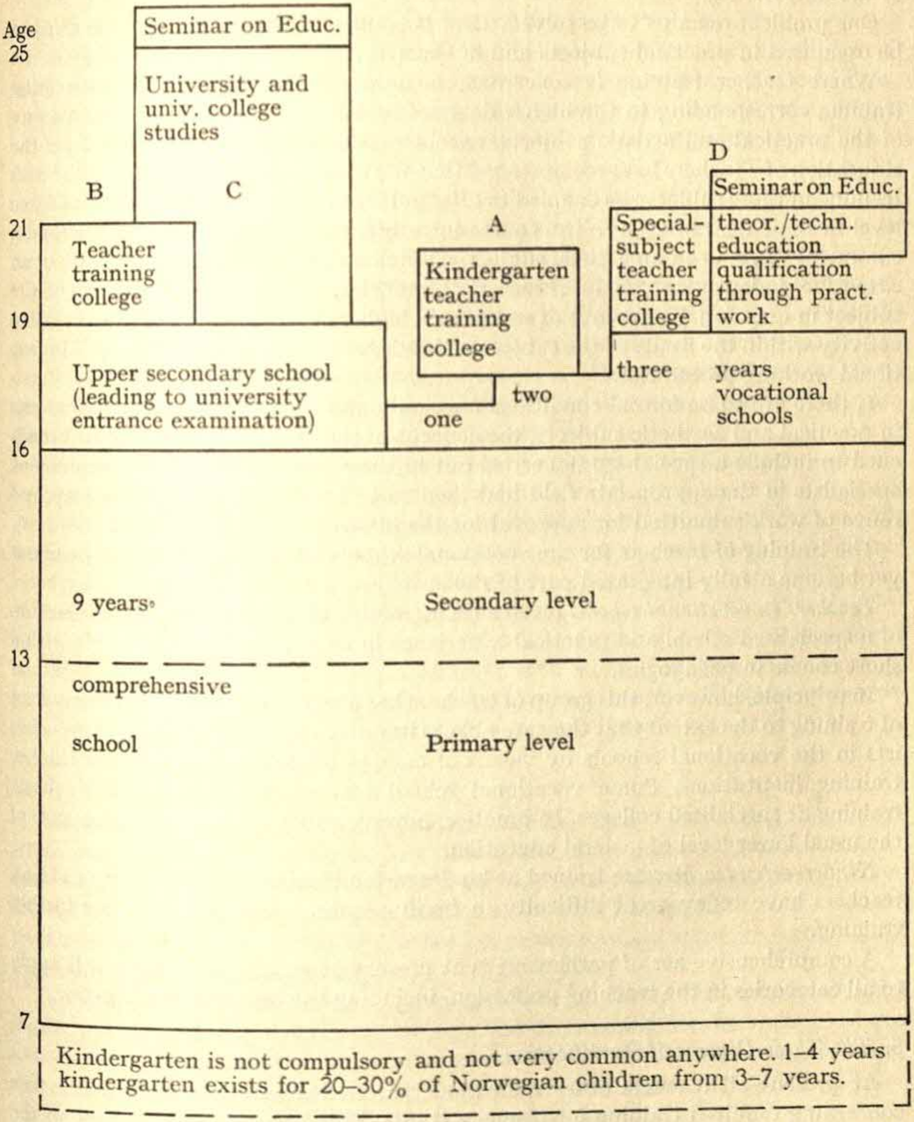
4. *Further Plans for the Teacher Training System*

Two committees have studied the question of the future organisation of teacher training, an ad hoc committee of the National Council for the Education of Teachers and a special committee set up to study the whole question of higher education. Both committees recommended a system question of an integrated training between the various teacher training institutions. In principle it will be possible to combine any of the training courses offered by the different institutions. A student will be able to start his training at a small teacher training college, continue with specialist training at a bigger college offering a wider range of courses and then take further training or in-service training as a practising teacher by means of the facilities available at the university or college of higher education most convenient to the place where he is working as a teacher. In this way it will be possible for a teacher to continue his training to attain a higher level of qualification, for example, by taking a half-time teaching appointment and spending rather more time in training.

The special committee for higher education recommended that a number of district colleges of higher education be established and that the present teacher training colleges form a core within the new colleges. The district colleges and the universities together will confer lower and higher degrees as part of the course of teacher training. The district colleges would preferably be concerned with the general aspects of training and with training for the primary school, but would also give specialist training to a certain extent in all subjects on the school curriculum. The facilities offered by the district college should be sufficient to train teachers for

FIGURE II

The Different Types of Teacher Training Related to the Different Types of Schools


Age
25
21
19
16
13
7
Seminar on Educ.
University and univ. college studies
B
C
Teacher training college
Upper secondary school (leading to university entrance examination)
A
Kindergarten teacher training college
one
two
three
years vocational schools
D
Seminar on Educ.
Special-subject teacher training college
theor./techn. education
qualification through pract. work
9 years
Secondary level
comprehensive
school
Primary level
Kindergarten is not compulsory and not very common anywhere. 1–4 years kindergarten exists for 20–30% of Norwegian children from 3–7 years.

A. Kindergarten teachers have at present two years of training after 1–2 years of vocational school or upper secondary school.

B. Teachers of the compulsory school have at least two years of training after upper secondary school. Teachers at the secondary level of the compulsory school must have training above this level, usually *adjunkt* level.

C. Teachers at the secondary level of the compulsory school may and teachers of the upper secondary school must have a full university training with a university degree.

D. Teachers of the vocational schools may be trained at special-subject teacher training colleges or obtain qualifications through practical work, further theoretical/technical training and a seminar on education.

whatever special subject teaching the primary school requires. Further training for specialist teachers and training for the higher degree would be chiefly the concern of the universities.

One problem remains to be solved. How is training to higher degree standard to be organised in practical subjects and in the arts?

Where teacher training is concerned, no opportunity for extensive specialist training corresponding to the higher degree standard has yet been created in any of the practical and artistic subjects, except music. The National Council for the Education of Teachers has recommended that the institutions chiefly concerned with training in these subjects be enabled to offer guidance to candidates at higher degree level in their field of study. The course for a higher degree in a practical subject, e.g. metal work, or in an artistic subject, e.g. textile design, is then to consist of an extensive, independent study of materials, working methods and processes of the subject in question. The course of study for a higher degree should develop creative activity within the limits of the subject and independence in relation to the conventional working procedures.

If there are to be formal conditions for candidates for the highest qualifications in practical and aesthetic subjects, the concept of the higher degree must be broadened to include a special study carried out in these subjects. The most prominent specialists in the appropriate field had then to be asked to judge the quality and range of work submitted for approval for the higher degree.

The training of teachers for the vocational schools and for kindergartens has not yet become a fully integrated part of the system.

Teachers in vocational schools receive their training chiefly through a combination of a specialised school and practical experience in their profession, together with a short course in pedagogics.

In principle, however, this group of teachers has also been brought into the system of training to the extent that they are able to improve their qualifications as specialists in the vocational schools by means of courses offered by the various teacher training institutions. Some vocational school teachers also receive their basic training at specialised colleges. In practice, however, they are hampered because of the usual lower level of general education.

Kindergarten teachers are trained at kindergarten teacher training colleges. These teachers have today great difficulty in finding suitable opportunities for further training.

A comprehensive act of parliament is at present being drafted, which will apply to all categories in the teaching profession, including the kindergarten teacher.

5. *The Three Degrees of Qualification*

At present all teachers other than kindergarten teachers come under the law concerning required training for teachers (1961). This legislation was based on the idea of an integrated system of recognised qualifications.

One *basic level* of qualification is that of a "teacher" (*laerer*) or "specialised teacher" (*faglaerer*), which requires at least two years' training after matriculation, or after a complete course of study at a specialised school (at about 19 years), or at least four years' training after the completion of the nine-year school.

In terms of the act, therefore, a "teacher" is a person trained at a teacher training college to be a general class teacher and a "specialised teacher" is one who has specialised training in a particular trade or subject and has undergone educational training either simultaneously with his special training or after it.

The *second degree* of recognised qualification is that of *adjunkt*. This requires at least four years' training after matriculation, or two years' training after qualifying for *laerer* or *faglaerer* status. The *adjunkt* may be a university graduate in special subjects. Alternatively, the *adjunkt* my have taken further training after qualifying as an *laerer* or *faglaerer*. An *adjunkt* might, for example, be a vocational school teacher with further training or a mathematics and physics teacher in the upper years of the primary school.

The *highest level* of teacher qualification is that of *lektor* which requires 6 years' training after matriculation, or four years training after qualifying as *laerer* or *faglaerer*. This qualification requires a more specialised study and must include a three year period of study of a single discipline usually together with an independently conducted piece of research. The *lektor* qualification is reached primarily through university studies. The intention of the act was to open this degree also to candidates who had begun their training as teachers either at training colleges or at specialised colleges, in whose case a specialised intensive course of study of at least three years' duration would form part of the *lektor* training.

The greatest difficulties remaining concern the practical and aesthetic subjects and, in particular, the teachers of practical subjects in vocational schools. The act's intention to make the three qualifications attainable by all groups of teachers will not be fulfilled until a solution has been found to a number of practical problems involved in the creation of adequate training opportunities for all groups of teachers. It is in this discussion maintained that independent, creative thought and action are equally essential to all cultural activity. If talented young people are to be encouraged to prepare themselves to contribute with an equal degree of enthusiasm in both fields, theory and practice, the cultural environment must be so organised that both types of education are evaluated on a similar basis.

6. *Equality of Opportunity*

The still existing dichotomy in teacher training then reflects the traditional stress put on theoretical subjects. The dual system will continue to exist to some extent as long as the kindergarten teacher and in practice also teachers for the lower levels of primary school and the vocational schools have less opportunity for further training than the teacher in the higher level of primary school and the teacher in the more theoretical secondary school.

The struggle to achieve a greater degree of balance in the system of teacher training so that the training in practical subjects and the training for the earliest stages in the school system get their share of importance is not yet at an end. It is still the case that teachers in the infant's school find training opportunities few and the pressure of work great compared with the situation of other groups of teachers. A great deal can still be done to engage the interest and understanding of school authorities on behalf of the significance of this fundamental stage of school teaching and to increase their awareness of the importance of sound training for those who work with young children, both in the kindergarten and in the infant school.

There is a continual need for the inclusion of new disciplines in teacher training courses. The breadth of teacher training has become so great that it is now necessary to differentiate training for all levels of teaching other than the kindergarten. In the infant's school, the teacher still has to teach over the whole range of the child's work, but even so there is an expressed need for differentiation e.g. because many teachers do special work with handicapped children in the framework of the normal school timetable. At all later stages, that is for all children over the age of 10, or beyond the third year of the basic school, there is a need for a division of teaching among several teachers. Only in special cases such as very small schools in sparsely populated country districts, does one teacher undertake to teach all subjects above the third school year. The older the pupils, the stronger the argument for specialisation among teachers.

At the same time it is stressed that specialisation must not be taken too far. Every teacher must primarily concern himself with his pupils as human beings, and be interested in their problems and their development as children and young people. Consequently, the teacher must not have too many pupils and must spend a relatively large number of periods with each class. Teaching must not be separated into too many disciplines.

These are some of the most important problems in Norwegian teacher education today.

In particular, the transition to a common basic school for all children up to the age of sixteen will be a pedagogical challenge to a whole generation of teachers. If the experiment is to be successful, the teachers must be accustomed to experimental work and also have better opportunities for reform work in school. Ordinary class teaching will not be sufficient to give all pupils the help they need to work with interest and to make progress.

Teaching staffs will need greater freedom within wide curricular and well defined financial limits to set up a more flexible and adaptable type of teaching suited to the local school situation.

A reorganisation of the individual school administration to provide greater freedom and greater responsibility for the teaching staff is perhaps the most important single step in the direction of extending teacher training to become training during service. Each teacher will then be able to continue to train himself while in service feeling that he belongs to a community in which he shares responsibility for the development of his own subjects and for the development of his own school.

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SOME FACTORS AFFECTING THE EDUCATION OF TEACHERS IN THE STATE OF VICTORIA, AUSTRALIA

Institutions for the education of teachers in Victoria fall into two main categories; in the one are those State Teachers' Colleges which are responsible for the education of students who intend to teach in the maintained primary schools; in the other are the universities – Melbourne and Monash – which, through their ordinary degree courses in Arts or Science and other disciplines, and through their Faculties of Education, and Melbourne's Department of Physical Education, are educating many of those who wish to teach in secondary schools or perhaps in universities. It will be seen at once that this division has its roots in the comparable division which has long existed in England. These two main groups have been joined, in more recent years, by a number of new institutions which are administered by the State Education Department. These include two Secondary Teachers' Colleges, each of which is adjacent to a university campus, a Technical Teachers' College, a Domestic Arts

College, and an institution ("Glendonald") where specialist training for teachers of the deaf is carried out. There is also an independent college, financed largely by the Independent Schools, called the "Associated Teachers' Training Institution" and a Kindergarten Training College, which, although not a state-maintained institution, nevertheless receives considerable support from public funds. Although informal relationships between many of these institutions are close and friendly, there are no formal ties between those maintained by the Education Department and the others. The Roman Catholic Church, also, through its various Teaching Orders, maintains a number of training colleges. The great majority of these colleges and universities are within the greater Melbourne metropolitan area; the main exceptions are the Teachers' Colleges in Ballarat, Bendigo and Geelong. For readers in the United Kingdom it may be worth remarking that the State of Victoria, though by far the smallest mainland state in the Commonwealth, is of almost exactly the same area as Great Britain. The third university, La Trobe, which admitted its first undergraduates in 1967, is also in the metropolitan area. It is proposing to begin taking its share in the professional education of teachers in the near future, and probably by 1970 at the latest. A rather more complete outline of the position in Victoria as it existed a year ago was given in the writer's article which appeared in the *Victorian Yearbook for 1967.*[1]) A general picture, dealing with Australia as a whole, may be found in Dr. L. W. Shears' article in the *Yearbook of Education 1963.*[2])

Readers who are familiar with the problems of teacher education in developed countries will realise at once the nature of many of those which are inherent in the situation outlined above. They are essentially those described by Brian Holmes in the General Introduction to Section III of the latter volume.[3]) In particular we find in Victoria a lively example of the difficulties caused by the separation of the education of most intending primary teachers from that of those who intend to teach older children. The association of the latter with the universities, especially, places them higher in popular esteem, and in social standing. This also affects, to a noticeable extent, the attitude of possible recruits to the profession (if it can be so called), and of their parents, and is certainly a contributing factor to the growth and continuance of divisions within the professional bodies to which teachers belong. But in Australia there are further divisions which will be less familiar to those brought up in the North American or British tradition. Each State Department of Education maintains its own entirely separate teaching service, which includes the primary teachers' colleges. It is difficult for those not familiar with this situation to realise how unusual it is for a teacher in Australia to transfer from the service of one State to that of another. Nor can a teacher easily transfer from the service of a State Department to that of an Independent School and back again; the superannuation arrangements, for example, and the method of assessing a teacher's position on the salary scale, which make these moves easy, and even in some cases, attractive, in Ontario or England, do not exist in Victoria. Hence, those who hold staff positions in Victorian State Teachers' Colleges have normally, and indeed almost without exception, spent all their working lives in the employment of this one authority. Another difference in the social climate which affects recruitment is that there has probably never been, in any part of Australia, that tradition which existed in England before the last war, by which some of the very ablest university graduates each year chose teaching as their career. This tradition was especially strong at Oxford and Cambridge, and in the nineteen-twenties one could be almost sure that, in any one year, a significant proportion of those who were awarded first-class honours degrees would become teachers in Independent or perhaps in Grammar Schools.

The problems arising from these factors have been greatly complicated by the very rapid growth of secondary and tertiary education in the last twenty, and especially in the last twelve or fifteen years. As in so many other countries, the growth of numbers in the secondary schools has been due not merely to the much higher numbers of children entering the schools, but also to the marked increase in the proportion of them who stay on for the full six years of the secondary course. This is illustrated by the fact that, in Victoria, of every hundred children who entered Form I in the High Schools in 1948, only 4.4% remained to spend a year in Form VI, whereas of those who entered the same Form in 1961, about 24% were in Form VI five years later. It will be seen that there is thus a greatly increased demand for University educated teachers and especially for those whose qualifications are appropriate for genuine sixth form work. On the other hand, the growth in the number of university places, and in the availability of fairly large numbers of Commonwealth Scholarships tenable at tertiary level, have opened the universities to many whose families would not formerly have considered this possibility for their children: among these, no doubt, are some (and perhaps many) who, in former years, would have entered Teachers' Colleges. A university course opens their eyes to the possibilities available to them in a wider range of careers, and many of them are lost to teaching. This, again, tends to be especially true of the ablest pupils, and, among this group, is more applicable to those who graduate in Science than to their colleagues in Arts. The position in this regard seems to be not unlike that in the United States as described by Martin Trow in his article in *Education, Economy and Society.*[4]) Hence the six Australian States, and especially Victoria, have made great efforts to provide scholarships (usually called Secondary Studentships) which will be sufficiently rewarding financially to attract able students, and which will be numerous enough to ensure a supply of university-educated recruits sufficient to meet the demand of the High Schools for teachers of the "academic" subjects. In spite of the immense difficulties of this task, the Victorian Education Department is still aiming at a four or five year university education (i.e. a first degree followed by a one year postgraduate Diploma in Education) as the pre-requisite for all such teachers.

A rough indication of the position in all State Secondary Schools may be found in the fact that the percentage of all the teachers in such schools who were graduates was, at a date early in 1966, just over 33%.

Unfortunately, failure rates in the Australian universities in general are deplorably high. The Victorian universities are no exception to this, although the position in them is improving. Nor are the total numbers of places in them keeping pace with the rising numbers of would-be entrants. Hence, the level of achievement required to gain selection for a place is steadily rising and is already very different to what it was ten, or even five, years ago. Further, the universities are much less ready to re-admit those undergraduates who fail in some subjects in any year of their course, so that a fair number who could, given time and good teaching, achieve a degree, are not permitted to continue in attendance. To meet the needs of this group of students, and to try to ensure that a worthwhile group of possible teachers are not lost to the schools, the Education Department has established its two Secondary Teachers' Colleges. Originally the one established at Melbourne University served two main purposes. One was to provide tutorials in normal university subjects, in the hope (which seems to have proved at least to some extent justified) of significantly improving the pass rate of the groups of students concerned; the other was to provide courses in most of the common university subjects so that those students who had passed a certain number of such subjects, but had then been excluded from further attendance at the university on account of failure, might be enabled to carry on with an alternative course, and achieve an alternative qualification. The colleges also give these students a professional training on traditional lines and those who succeed in the whole course are awarded the Trained Secondary Teacher's Certificate – a title very reminiscent of the French *Certificat d'Aptitude Pédagogique pour l'Enseignement Secondaire*. Some of these students are permitted to continue with university studies on a part-time basis; and they may do this either concurrently with their college course, or after its conclusion. Thus a proportion of them have both a degree and the T.S.T. Certificate.

The Monash College, which opened in January 1966, performs a very similar function but, as Monash set out from the beginning to provide tutorials in all subjects, it was agreed that the college would not offer a competing range of them. It should be added that both colleges undertake certain administrative functions, such as the payment of students' allowances, for holders of the Secondary Studentships, and also that, in the last two years, a small number of students have been admitted directly to the college courses. These students have successfully completed the so-called Matriculation examination for which virtually all students enter at the end of their sixth year in State, High or Independent Schools, and have thus (by passing in four subjects, including English Expression, at the one examination,) gained the qualification which until fairly recently would have ensured them admission to a university, and which now entitles them to be considered for selection. These students will undertake a four year concurrent course of general and professional education, and, if successful, will gain the T.S.T.C., or perhaps a Diploma with some, as yet undecided, name.

This situation, as part of that existing in the whole Commonwealth, was recently examined by the Committee on the Future of Tertiary Education in Australia which was appointed by the Commonwealth Government in August 1961. It was to consider the pattern of tertiary education in relation to the needs and resources of Australia, and to report to the Australian Universities Commission on the future development of education at this level.

Its Chairman was Sir Leslie Martin, the first Chairman of the Commission, who still held that office, and it was thus usually referred to as the Martin Committee. It will be seen that, although it was not to report direct to the Commonwealth Government, it was in most other respects a counterpart of the Robbins Committee in Britain.

Like the Robbins Committee, it sought to find ways of giving the Teachers' Colleges a measure of autonomy, and also of relating their work more closely to that of the Universities and their Faculties or Departments of Education. It recommended 5) that these objects should be achieved by the establishment, in each State, of a Board of Teacher Education. This would have the State Director, or Director-General, of Education as its Chairman, but it would include among its members representatives of the universities, of the non-Government Teachers' Colleges, of the State Teachers' Colleges, and the State Department of Education and also citizens with knowledge of and interest in education. This Board would be the channel through which the Commonwealth Government could receive advice and provide finance for this section of tertiary education; to date, it had given no financial support for the education of teachers except for those who were university students. The Board would also keep under review the courses of study and the staffing of the institutions concerned, and award the professional qualifications which all teachers, in whatever schools they wished to teach, would require.

While at first this qualification would consist of diplomas or certificates on the present lines, the Boards would have the power at least to examine the possibility of granting professional degrees when they considered that the quality of the work in the colleges justified it, and individual colleges, as they developed in quality and maturity, could be given an entirely independent existence. It was recommended that all teaching posts in the colleges should be filled by open advertisement, and their Principals and staff members would clearly have a large say on the Boards of Studies which would decide on curricula and determine academic standards. These State Boards would thus, in many respects, resemble the English Area Training Organisations or Institutes of Education. Their creation would make it possible for the Commonwealth to provide finance for all kinds of teacher training, would help to break down barriers between the various types of institutions, and bring the colleges into a closer relationship with the university. It would also break down the isolation of each State service, allow the teaching staff to gain more varied experience, and separate the training institutions from the authority which would be employing most of their output. The Committee also recommended that a proportion of the students so trained, and financed by State and Commonwealth, should not be required to give any undertaking to take up teaching as a career or to serve in any particular State. This would be an important departure from the present system whereby the Australian States, like France and Israel, but almost no other developed countries, require those who accept their Secondary Studentships or places in Teachers' Colleges to serve in the schools of that State for a specified period of years. It is interesting to note that among the members of the Committee who signed this report were the then Directors of Education for the States of New South Wales and Victoria which between them have much more than half of the population of the Commonwealth.

The Commonwealth Government, although it accepted many of the recommendations of this Committee, refused to agree to those which dealt with the Boards of Teacher Education. In his speech in the House of Representatives, Sir Robert Menzies, the Prime Minister, made it clear 4) that his Government regarded the education of teachers as the responsibility of the States. He further remarked that the cost of establishing the Boards would be moderate so that the State Governments could establish them even without Commonwealth Aid, if they so wished. This decision was a great disappointment to almost all sections of the teaching profession. The Australian College of Education protested strongly to the Government. Its representatives waited on Senator Gorton who was at that time the Minister responsible, within the Prime Minister's Department, for the educational activities of the Commonwealth and put before him a careful statement of the arguments in favour of the creation of the Boards. It is interesting that , at the next election, the Liberal Party made it clear that it would, if re-elected feel free to make Commonwealth grants to aid the States in their programmes for the education of teachers. Since their return to power, they have allocated funds for this purpose; they are, however, of a capital nature, and have not been tied to any re-arrangement of the administrative or academic structure. The divisions between the institutions, therefore, continue to exist, and are as sharply defined as ever.

A further disappointing trend has also recently become apparent, especially in connection with those students studying science subjects. In 1963, Melbourne University admitted to its Science Faculty 170 holders of Secondary Studentships. The development of Monash, destined soon to be as large as Melbourne (which has over 14,000 students and is therefore much larger than any University in the United Kingdom, except London), led many to hope that the desperate shortage of teachers of science and mathematics might soon be alleviated. But the actual admissions of studentship holders to the Faculties of Science have been as follows:7)

	Melbourne	Monash	Total
1961	118	10	128
1962	116	14	130
1963	170	1	171
1964	148	59	207
1965	117	62	179
1966	85	88	173
1967	84	81	165

Thus, although the total number of entries to the two Faculties has grown rapidly, this had not, in the five year period which ended in 1967, produced any increase in the number of intending science teachers who were included in that number. While it is impossible to be sure of the reasons for this disappointing situation, it may well have been due to the fact that the minimum mark which secured entry to a Science Faculty rose rapidly over this period. It seems likely that many of those who intended to become teachers were those whose marks, in the earlier years, were not far above the minimum sufficient to gain admission, so that, as this minimum rose, a progressively smaller proportion of the students admitted were holders of studentships. In 1967, Melbourne University took a bold step in an attempt to remedy, or at least alleviate, this position. In spite of the fact that it was making determined efforts to ensure that its total admissions did not rise, it arranged to admit a maximum of one hundred students to a four year course leading to the award of the degree of B.Sc. (Education). The exact content of this course is still not decided in detail. But it is clear that it is to be a "concurrent" course, designed for intending teachers. The first year consists entirely of science subjects; but these are being taught very largely by members of the staff of the Secondary Teachers' College, and in the College's laboratories. The second year is to include an education unit, which is to be an introduction to educational psychology, and which will be taught by the staff of the University Faculty of Education. The course as a whole, therefore, will provide an interesting example of co-operation between college and university; and the State, through the college, will clearly bear a much larger proportion of the cost than it does of other University courses.

Monash, on its side, has decided to increase its intake of first year students into its Faculty of Science above the previously planned maximum, if possible, by proposing to the Australian Universities Commission that its first year intake should rise from 350 in 1967 to a maximum of 550 in 1971. Monash's Faculty of Education, too, has made its interest in this particular problem clear by appointing to its third

Chair Dr. P. J. Fensham, formerly Reader in Physical Chemistry at Melbourne, whose field is Science Education.

It is very difficult to estimate how far these moves will be successful in overcoming the shortage of well qualified teachers of science and mathematics; the serious nature of this shortage has been made very clear in the report of the College of Education,[8]) *Teachers in Australia*, published in 1965, which showed that of those who were teaching Mathematics at Matriculation level, only 42% had studied the subject for three years or more at a university, while 20% had never studied it at a University at all. The corresponding figures in Chemistry were 39% and 14%, in Physics 31% and 16%, and in Biology 26% and 38%.

These figures were based on replies to a questionnaire completed by a very large sample of teachers, and can be accepted as giving a reasonably true picture of the situation over Australia as a whole. There are, of course, wide variations between the different parts of the Commonwealth, and accurate figures for particular areas are not easy to find. A study, as yet unpublished, by L. D. Mackay, a member of the staff of the Monash University Faculty of Education, shows quite clearly that the situation in Victoria, as regards teachers of Physics, is certainly serious, even though it may be somewhat less so than the above figures might indicate.

A further difficulty which appears to me to be affecting the recruitment and education of sufficient teachers of high intellectual calibre lies in the reluctance of many of the teaching staff of the universities to recognise the importance of the problem and their own responsibility for helping to solve it. One would like to think that they were aware of, and in agreement with, the point of view expressed by Jean Floud when she said "... The attempts following the Second World War to found a modern system of universal secondary schooling are making the universities dependent today as they have never been hitherto on the disposition and quality of the *whole* school population, and it is difficult to conceive of a case against the adoption of teaching (i.e. as a career) that does not rest on false grounds of misunderstanding and snobbery about education as a subject of study at University level, or mistaken grounds of expediency and temporary convenience of administration." [9])

In Victoria, at any rate, this appears not to be the case, in spite of the fact that a very high proportion of undergraduates are intending to become teachers. At Monash, in 1967, the first year intakes to the Faculties of Engineering, Law and Medicine were 190, 253 and 160 respectively – a total of 603 for these three established professional schools. But, of the first year students in the Faculties of Arts, Economics and Politics, and Science, it is probable that not less than 560 were intending to become teachers in schools. It is, therefore, not too much to say that, of the universities' functions as teaching establishments, by far the most important, and the one which will probably have the most far-reaching effect on the future of the universities themselves, is the education of intending teachers – including, of course, not only those who will teach in schools, but also those who will staff the universities, and the other tertiary institutions to which the Commonwealth Government is having increased attention.

How then, should the Commonwealth and State endeavour to overcome the serious handicaps which at present obstruct their efforts to recruit more and better teachers?

It seems clear that the most important general objective is to break down the divisions which exist between the various institutions concerned with the education of teachers, and to organise a co-ordinated system in such a way that students can pass readily from one institution to another. It seems clear that one of the reasons for the success of the junior colleges in many parts of the United States lies in the fact that, while they provide terminal courses, (both vocational and non-vocational) for many students, they offer to others a means of showing that they can, in a tertiary environment, achieve success of such kind as to indicate that they are likely to succeed in a university. This is allied with the readiness of universities and State colleges to admit such students; in reverse, students who find themselves out of their depth in the university environment can find a terminal course which will enable them to achieve success of a different kind, or to rehabilitate themselves for a further attempt at the university hurdle.

The Commonwealth Government's changed attitude towards Teachers' Colleges may offer a ray of hope in this connection; in 1967, the sum of $ 8,000,000 has been granted to the States as Capital grants to be expended on teacher training institutions, and a condition of these grants has been that 10% of the additional places must be made available to students who have not given any undertaking to enrol in the State service. The Victorian State Government, too, has recently begun to give substantial assistance to the Independent Teachers' College.

The Commonwealth Government has also acted on the recommendations of the Martin Committee, referred to above, in granting substantial funds to Institutes or Colleges of Advanced Education, of which one has already been created in Victoria. It may be hoped that this will, in time, make it possible for these colleges to recruit more highly qualified staff, and to improve the quality of their buildings, equipment, and student amenities. This may make it possible for those colleges to provide a sound tertiary education, perhaps especially in science and applied science, to many young people who would like to teach. But it is surely of the utmost importance that Victoria (and Australia, too, for that matter) should not set up a compartmented "tripartite" system of tertiary education: Rigid divisions between the three sectors implies the necessity of selection in some form or other; and surely no one can suppose that selection of such a kind at 17+ or 18+ is likely to be much more successful than selection for various types of secondary education, at the age of 11+, has proved to be in England. It is vital that those who are concerned with the planning of tertiary education here in Victoria, of which, as I have tried to show, the education of teachers is probably the most important single part, should be fully aware of the implications of the latest research of the psychologists in this area. The work of Professor Vernon, for example, so admirably outlined for the layman in that section of the Robbins Report headed "The So-Called Pool of Ability," 10) ought to be known to all those concerned with the decision-making process.

In Victoria, the colleges which are concerned with the education of teachers for younger children already have among their entrants many who have completed a full year of sixth-form work. In 1967, for example, out of 270 entrants to the Burwood Teacher's College in Victoria, 180, or 67% had completed the full Matriculation examination successfully; and this is generally a rising trend. The position is thus not dissimilar to that set out in the table given in Chapter Nine of the Robbins Report. Further, the extension of the present two-year course, so that all entrants will have a full three-year course of study, is imminent; it is to be introduced, in Victoria, for some entrants in 1967, and will probably be available to all in these colleges by 1969. One may hope, therefore, that very soon there will be in the

Teachers' Colleges a very high proportion of students who hold the minimum qualifications for entry to a university. Efforts are also being made at the present time to co-ordinate more closely the terminal qualifications which are achieved at the end of the secondary school course by those pupils who pass through the system of secondary technical schools which is strongly established in Victoria.

The possibility of a more flexible system of institutions for the education of teachers is thus becoming less impracticable than it would have seemed a few years ago. It may be that Victoria, because of its smaller size and relatively denser population, could achieve this more easily than some other States. Monash University, for example, will shortly have adjacent to its own campus not only the Monash (State) Secondary Teachers' College, but also a new College of the Marist Brothers. These two, when combined with the university's Faculty of Education, could well form the nucleus of an Area Training Organisation; and there are, within half an hour's travel, three State Primary Teachers' Colleges, the Kindergarten Training College, the Associated Teachers' Training Institution (Mercer House) and two colleges maintained by the Roman Catholic Church. These ten institutions could easily form a thoroughly viable Area Training Organisation.

The proposals put forward by the Martin Committee could readily be implemented here; all that would be needed to ensure their success would be, on the one hand, a readiness on the part of the university to recognise the vital importance of this proposal, and to support it by giving appropriate recognition of successful work undertaken in the other institutions, and, on the other, a bold approach by the State Department of Education and the Teachers' Tribunal which would allow a modification of the present systems of promotion and superannuation, and permit a flow of personnel both into the whole system and out of it, and between its various parts, which would remove (perhaps in a series of steps) the present obligation to serve in its schools which is a condition of the award of its Secondary Studentships, and help to ensure freshness and vigour in its senior staff members by encouraging their movement between various parts of the system and giving them opportunities for refreshment and further training within Australia and overseas. Present developments in many areas of Australian life (for example, in the discovery and utilisation of oil, minerals and natural gas) are promising in the extreme. It is vital that the effective development of the most precious of all our resources should not be hampered by unnecessary barriers to the fullest education of the teachers whose service – if skilful and devoted enough – can do so much to contribute to the economic and personal development of the whole community.

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R. Selby Smith, Clayton, Australia

BOOK REVIEWS – BUCHBESPRECHUNGEN ANALYSES BIBLIOGRAPHIQUES

Biggs, J. B., *Mathematics and the Conditions of Learning: A Study of Arithmetic in the Primary School.* With Statistical Appendix by John Hall. London: N.F.E.R. 1967. pp. 441. 55/–.

Comparative studies of teaching methods, in mathematics as elsewhere, frequently suffer from at least one of two critical, sometimes fatal, semantic disorders. One difficulty arises whenever an investigator assigns names to methods without consulting the research literature and without devising a rationale to link the methods he has chosen to study. A second difficulty occurs if the classroom practices grouped together and called a method differ from one another just as much as they differ from other practices. The first difficulty can lead to uninterpretable results; the second, to no results at all.

In his study of methods of teaching primary school arithmetic (part of which was reported previously in the N.F.E.R. publication *Anxiety, Motivation and Primary School Mathematics*), J. B. Biggs neatly avoids the first hazard by constructing a model of educative learning that serves to integrate previous research and to describe current instructional programs. In the model, based primarily on work by Bartlett, Bruner, and Piaget, learning is represented as a process of coding information for storage and recall, thus allowing teaching methods to be characterized, and evaluated, in terms of the kind of coding they promote.

Traditional methods of teaching arithmetic, in which the goal is mastery of computational skills, require narrow (i.e., simple, specific) coding techniques only. In contrast, the other major types of method, structural and motivational, are designed to promote broad coding. Structural methods aim at developing a student's understanding of basic concepts as well as his manipulative facility. They employ concrete materials (e.g., Stern blocks, Cuisenaire rods) as analogues of mathematical structures. Motivational methods use "real life" problem situations to arouse the student's interest and to develop his practical understanding of mathematics. Like structural methods, the approach is activity-centered and informal; like traditional methods, special apparatus is not used.

From his model Biggs derives hypotheses concerning the outcomes of instruction under these methods, and he reports the results of an investigation undertaken to test the hypotheses. At the end of the 1958–59 school year, over five thousand students at the third year junior level of 87 schools in England and Wales were given a battery of six tests: a verbal reasoning test, two standard arithmetic achievement tests, two specially-devised tests to measure the understanding of arithmetic concepts, a scale designed to assess attitudes toward arithmetic, and an anxiety inventory. Additional information about the children and the school was obtained from a questionnaire sent to headteachers. Using responses from the questionnaire, Biggs classified children according to the method by which they had been taught. Then, using multiple regression analysis and analysis of variance techniques, he attempted to assess differences in performance between the method groups and between various subcategories of the groups.

Although the analyses are elaborate and forbidding (one appendix comprises 125 pages of tables), there are only a few results of consequence. Probably the most provocative findings are those from a subsidiary analysis concerning the Dienes method (a structural method employing multiple embodiments of a given mathematical structure). The data suggest that, in line with Biggs' predictions, extended use of Dienes materials, when compared with traditional practices, results in higher arithmetic achievement and attitude scores, especially for girls and for low-ability students. Unfortunately, however, only one Dienes school was available for study, and Biggs had to resort to the always-risky technique of matching students. The resulting analysis of variance, in which an approximation technique was used to compensate for non-orthogonality, yielded findings that, in addition to resting on shaky statistical grounds, are not fully comparable with those from the main analysis and that are therefore awkward to interpret.

The most disappointing result of all is the absence of clear-cut differences between the methods (excluding the Dienes method) on the achievement and attitude scales when verbal ability and other background variables were held constant. Even after consideration of the flaws inherent in assessing method effects by means of a one-shot survey, with no control over the assignment of students to methods, I would contend that the most likely source of failure is the second semantic disorder mentioned above. If methods are defined solely in terms of the material allegedly used, with no direct information available as to what the teachers actually did with the material, one is out on a perilous limb indeed when he contends that one "method" is superior to another in promoting the development of broad coding systems. Biggs' model, as he himself implies in a masterly summary section, is still in need of an adequate test.

JEREMY KILPATRICK, New York

BRICKMAN, WILLIAM W., *Educational Imperatives in a Changing Culture. Fifty-Third Schoolmen's Week Proceedings*. Philadelphia: University of Pennsylvania Press 1967. pp. 232. $ 6.

This rather puzzling title describes the proceedings of the 53rd Schoolmen's Week at the University of Pennsylvania in March, 1966.

The book falls into four parts: educational challenges; the teacher – U.S.A. and abroad; the curriculum and the pupil; and inter-university co-operation. Several of the papers have been previously published elsewhere. Quite separate themes were dealt with during the conference, and therefore the book which results from their compilation barely hangs together in a way which justifies presentation to an international audience. Some papers are excellent by themselves, and deserve permanence. Others are ephemeral. In any case the collection would be extremely hard to classify on a library shelf.

Leaving on one side the kind of address which Americans call "inspirational", one may attend to those which tell us something. Among the latter are those by R. Havighurst (on social change), Brubacher (on the "college tradition"), Eckstein (on teacher preparation in England and the U.S.A.), Brickman (on the historical background of international co-operation), Fraser (also on co-operation), and Shirley (on government relationships with higher education in the U.S.A.). Most of the others seem limited to the United States in their appeal, and require considerable insights into the American scene to be intelligible at all.

Among the papers named above, those by Havighurst, Eckstein, and Shirley deal with important problems comparatively or in a developmental perspective. Therefore they raise important questions for non-Americans, and should be presented to a wide audience. Shirley's writing is timely, as it deals well with the implications for academic freedom and for student unrest of some contractual relationships between higher education and government. There are some thoughtful questions on teaching and research, and on the future of universities generally. Likewise Havighurst's essay on social change and "the multiversity" deserves careful consideration.

It is a pity that questions of this importance become lost in an omnibus report of a conference.

EDMUND KING, London

CLAUSSE ARNOULD, *Initiation aux sciences de l'éducation*. Liège: Georges Thone 1967. pp. 180. BF 200.

Dans une société qui, comme la nôtre se caractérise par le dynamisme, l'éducation doit se poursuivre tout au long de la vie. Il n'est plus possible de diviser celle-ci, comme autrefois, en une période de formation (l'enfance) suivie d'une longue période d'application (la vie adulte). Aujourd'hui chacun de nous doit être capable, non plus seulement de suivre, mais de prévoir, parce qu'il nous appartient de maîtriser et de diriger un courant irréversible qui peut conduire à l'épanouissement comme à l'anéantissement des valeurs humaines. Il s'agit donc de réaliser par l'éducation une disponibilité qui puise dans le présent les possibilités d'avenir qu'il renferme et qui en élabore les objectifs et les ambitions de demain.

Les tâches de la pédagogie se sont ainsi singulièrement modifiées et élargies. Le terme même de "pédagogie" est devenu inadéquat et on lui substitue de plus en plus celui de "sciences de l'éducation". On entend par là que l'efficacité de l'action éducative est fonction de la connaissance de l'être humain, tant sur le plan biologique, que psychologique et social.

Mais avant d'approfondir les problèmes de technique méthodologique, il importe de traiter le problème axiologique, c'est-à-dire des buts et des valeurs: Pour exploiter les matériaux d'une manière adéquate, nous devons savoir auparavant "quelle est la destination du bâtiment que nous voulons édifier, les services qu'il doit rendre, les besoins auxquels il doit répondre".

Jusqu'à la fin du XIXe siècle, l'axiologie était régie par une philosophie de la permanence, c'est-à-dire des archétypes et de l'absolu. Les traits essentiels du monde traditionnel sont le statisme et la dichotomie (distinction entre classes dirigeantes et classes exécutantes). Aujourd'hui la conception d'une vérité définitive dans quelque ordre que ce soit est contestée. Dans le monde moderne, le dynamisme remplace le statisme et la dichotomie disparaît: "Nous sommes, non pas ce que nous sommes au départ, mais ce que nous sommes capables de réaliser à l'arrivée".

Ceci nous amène à comprendre que l'éducation se trouve aujourd'hui à un tournant important de son histoire et que c'est de l'option qu'elle fera que dépendront à la fois ses structures, ses programmes, ses méthodes, donc son efficacité et sa pertinence vis-à-vis du monde auquel elle doit répondre. Ce qui signifie que c'est notre avenir, notre existence même, qui sont ici en question. Comme le dit Jean Rostand: "L'Homme occupe une place éminente; il devient en quelque sorte responsable de l'orientation et du devenir de l'évolution ultérieure. Le monde futur sera ce que l'Homme le fera".

Après avoir ainsi dégagé les objectifs des sciences de l'éducation, A. Clausse entreprend l'étude méthodologique de leurs techniques. Il rappelle que, si la croissance de l'animal est contenue dans ses propres limites ,chez l'homme, la somme des apprentissages ("nurtures") qui viennent se greffer sur la "nature" (prise au sens de réalité biologique fondamentale de l'espèce humaine, c'est-à-dire les aptitudes congénitales) est pratiquement illimitée. Dans ses rapports avec l'éducation, les sciences humaines se ramènent essentiellement à l'étude du "learning", défini comme la modification du comportement réalisée par la "solution" d'un problème que posent à l'individu ses relations avec le milieu. Il fait ensuite le point des connaissances biologiques, psychologiques et sociologiques qui fournissent à l'éducateur d'indispensables renseignements sur les mécanismes mêmes de la vie mentale, les moyens d'action qui en résultent, le sens dans lequel doit s'effectuer cet effort.

En conclusion, A. Clausse constate qu'une opposition demeure entre formalisme et réalisme, opposition qui, sur le plan éducationnel, se manifeste par le "pérennalisme" et le "progressivisme". Le *pérennalisme* affirme que: 1) Malgré la diversité des environnements, ce qui est typiquement humain dans l'homme reste partout le même. Et donc l'éducation doit être, dans ses fondements et ses éléments essentiels, la même pour tous et partout. 2) Puisque la rationalité est l'attribut le plus élevé de l'homme, il doit l'employer à diriger sa nature instinctive selon des fins délibérément choisies (Les hommes sont libres et non déterminés, donc responsables de leurs actes: le "milieu" n'excuse rien). 3) L'éducation n'est pas une vie, mais une préparation à la vie. 4) Le programme doit se fonder sur quelques matières de base qui mettront l'enfant en contact avec les valeurs permanentes et rationnelles (Il faut rejeter ce qui est attirant). Le *progressivisme* soutient que: 1) L'éducation doit être active et reliée aux intérêts et aux besoins de l'enfant. 2) L'apprentissage doit se faire par la solution du problème et non par la transmission des connaissances. 3) L'école est une vie plutôt qu'une préparation à la vie. 4) L'école doit favoriser la coopération plutôt que la compétition.

Ces deux philosophies expriment les positions extrêmes entre lesquelles se situent toute la gamme des opinions personnelles. L'éducation, étant à un tournant de son histoire, nous impose une prise de conscience nette des problèmes en cause, des facteurs qui les conditionnent et des implications que comporte la solution que nous adoptons. C'est à cette prise de conscience que l'étude de A. Clausse apporte sa contribution parce que, si chacun reste libre de l'option qui répond le mieux à ses

tendances profondes, la vraie liberté de choix ne peut se manifester dans la confusion et l'ambiguïté; elle implique la lucidité.

PIERRE FERRAN, St. Cloud

DIESTERWEG, FRIEDRICH ADOLPH WILHELM, *Sämtliche Werke. Band IX.* Bearbeitet von Ruth Hohendorf. Berlin: Volk und Wissen 1967. 640 S. DM 26.

The 9th volume follows in plan the eight volumes published before. The same care is taken in detailed and voluminous notes and personal register (index). For the study of Diesterweg they are necessary accessories and evidently have taken a lot of time. The editor should be congratulated for the objectivity and lack of propaganda. Diesterweg or "Düsterweg", as he was called by his enemies, provided propaganda himself. He is a follower of Locke, a deist and adherent of German national Revolution of 1848, from which he expected school reform, both elementary and secondary, but the clerical-military reaction of 1849 shattered all his hopes. No wonder that the 9th volume, which includes the years 1850–52, is chiefly devoted to his fight against clerical or political absolutism. Of 640 pages about 115 pages are devoted to the Editor's Notes (pp. 525–607) and Personal Index (pp. 607–640). Of the remaining 522 pages Diesterweg devotes the whole year 1852 to his struggle with the Churches (pp. 357–522). Not only the Roman Catholic Church is attacked, Protestant Churches fare no better. The Catholic Church, subservient to a foreign Pope, naturally enough, is accused of foreign influence. But with German Protestant Churches, Lutheran, Calvinist or Unitarian, he needs to prove his case. Diesterweg begins by defining "Protestant" as a "protest" against the monopoly of Rome and the demand of the reform of the universal Catholic Church. Having achieved, with the help of secular power, regional domination, Luther and Calvin abandoned the cause of reform and adopted the old Catholic dogmas without the Pope of Rome. Calvin even imitated the Inquisition by burning Miguel Servetus for heresy. Luther appealed to secular authorities in his fight with the anabaptists. Both Protestant Churches have grown in status since then and in the middle of the 19th century resembled the Roman Catholic Church more than the former protesting reformers. Especially bitter is Diesterweg's attitude towards the Inner Mission of the Lutheran Church. Developped from Franke's pietist institutions it has grown into a sign of reaction, which was so prominent in Prussia in the 18th century. Diesterweg calls it antinational and antihuman, in service of the reaction. In spite of calling herself undenominational the Inner Mission accepted and recognized only members of the Lutheran Church. In this respect the Mission is antinational as it opposes German Protestants to German Catholics and thus engenders national split. The Inner Mission is also antihuman as it promotes only Lutheran and not the "Man" (*Mensch*, so clear to Diesterweg), and thus engenders hatred of non-Christians, Jews, Moslems, Buddhists etc. Receiving special facilities in education from reactionary kings the Inner Mission serves the reactionary cause and Diesterweg warns all teachers not to enter their societies. He did not mention a similar development in England or America.

After his dismissal from the Directorship of the Berlin Seminary Diesterweg felt free to publish his real thoughts about the Churches and the Prussian kingdom.

He excepts only Frederick the Great as a representative of Enlightenment (*Aufklärung*), who promoted science, arts and education. However, the cynicism of Frederick the Great is not noticed by Diesterweg. Diesterweg is a declared follower of democracy and principles of Enlightenment. He accepts democracy as inevitable future and neither questions nor defines it. Accepting the democracy as an inevitable future he attacks absolutism, whether it be clerical or political. He accused the Prussian kings of absolutism but not of their nationalism, he himself being a nationalist. He accused the Prussian kings of giving the Churches the right to interfere in the school matters.

Diesterweg points out (pp. 425–26) that the new school of the future is based on the autonomous development of children, preparing them for actual life and social responsibilities. The old school, both Catholic and Protestant, is authoritative, dogmatic and formalistic. The new school demands only teachers and masters, whilst the old school employs monks and priests in Catholic regions and preachers and pastors in Protestant countries. The school of the future will train human beings (*bildet Menschen*), while the old school produces only young Catholics, Lutherans, Calvinists etc. Diesterweg is definitely against the old school which subordinates the human reasoning power to the authority of the Church, according to its dogmas. He is on the side of reason and promoted enlightenment. He quoted Kant, Rousseau, Herder, Mirabeau, Schelling and others in his support and thus strengthens his case by the opinions of famous men. His demand to follow the outward nature of the world and the inner nature of the child led to the belief that in new primary schools the curriculum and methods would be reformed and more contemporary.

Diesterweg is a prophet of the future; he wrote his articles more than hundred years ago, before his demands were realised in our time. He made mistakes, but they could be explained by the reactionary period of his time. After the 1848 Revolution, he foresaw all the changes in the school administration, curricula and methods. Being mainly concerned with elementary schools and teacher training for country districts, Diesterweg did not overlook the classical Gymnasia in urban communities which also needed reform. He was a moderate nationalist, he mentioned that his reforms will promote education among the Jews, Moslems and Pagans alike, or, as he said in another place, the whole humanity. He took part in celebrating Frederick the Great, he did so in honour of the man (*Mensch*) and not to honour the Prussian king. His role in the development of German education is recognized by the historians.

NICOLAS HANS, London

EGGLESTON, S. JOHN, *The Social Context of the School*. London: Routledge and Kegan Paul 1967. pp. 116. 7/6 limp. 15/– cloth.

In his introduction, the series' general editor states that the Students Library of Education is aimed primarily at students in Colleges of Education and at University Institutes and Departments of Education although it should also be of value to teachers in service and educationists generally. Volumes have been or will be prepared to provide "authoritative and up-to-date accounts of the topics within the major fields of sociology, philosophy and history of education, educational psychology and method." Eight titles have already been published and at least another thirteen are forthcoming. Also contemplated are separate volumes of readings, collections containing selections from important literature in a particular field or discipline.

This volume deals with "the social environment external to the school and describes various aspects of its impingement on the life and work of schools of all kinds." In separate chapters, Eggleston deals with the community environment, the catchment area population, the school's administrative context, the labor market, and the peer group as significant aspects of the social context affecting education. A ten page introductory chapter deals with environment and education. A two-and-a-half page conclusion is included "to warn the reader of some of the problems of expressing complex social facts" while at the same time alerting him "to the complexity of his own role as a future educationalist." An 84 item bibliography is predominantly from British sources with some 15 American references included.

Eggleston credits the sociologists with "showing the existence of relationships, hitherto unrecognised or ignored, between environment and educational performance." Focusing primarily on England, he observes how the Newsom, Robbins and Plowden Reports – particularly the latter – have helped to make sociological insights part of the educator's general knowledge and, indeed, that of the community at large. Three inter-related categories of the social environment are considered — the *individual pupil*, his background and experience, his social class, the attitudes of his parents, the size of his family and linguistic practices at home and in the neighborhood; the *internal environment of the school*, organisation of the school, the values and relationships of headteachers, staff and children; the *external social environment of the school*, the policies of the local education authority, population pressures, school-leaving requirements of local employers and the educational expectations of the local community. It is this third category of environmental variables affecting education that is the focus of this volume.

Within the limits within which the author must have had to work, Eggleston has done a commendable job. The general editor points out that "care has been taken that specialist topics are treated lucidly and usefully for the non-specialist reader." Understandably, to condense even those aspects of the sociology of education – specifically those which deal with the social environment and educational performance – into 110 small pages, is no mean task. The writing is lucid but the terse style and conciseness result in a general impression of "writing down" for the non-specialist student. The overall result tends to be a somewhat general essay, written in popular, non-technical language which will hopefully sensitize the reader to the general problem and perhaps stimulate him to read further. Presumably the accompanying volumes of readings will provide the student with the details of theories and research which are briefly mentioned in the text. However, there is reason to believe that the intended audience could handle material of greater depth and more technical language than is contained herein. Even so, Eggleston's readers will no longer fail to recognize or ignore the impact of environmental factors of a sociological nature on the educational system, including their own performance.

A. HARRY PASSOW, New York

L'enseignement direct par la télévision. Rapport du séminaire européen – Rome 1966. Strasbourg: Conseil de l'Europe 1967. pp. 100.

The term "direct teaching" as applied to television is open to diverse interpretations. It may, for example refer to a specific didactic function, where the medium is required to transmit the main informational content of a course in a particular subject, in contrast to programmes considered to be of an enrichment or supplementary nature. It may refer to a method of presentation, whose forms are to be distinguished from those characteristic of television as a mass medium of popular entertainment and enlightenment.

At the 1966 Council of Europe seminar in Rome on direct teaching by television, of which this book contains a report, discussion was confined to considerations of complete "broadcast courses planned in conjunction with other modes of instruction, and designed to help serious and committed students (or those who might become so) towards a progressive mastery or understanding of some skill or body of knowledge". (p. 83). The most frequent accompaniment to the television programmes considered were those of printed texts or work sheets, correspondence tuition and group study.

What is common to each of the projects from four member states, which are examined here in separate papers, is the endeavour to find appropriate means of utilising the potentialities of television for *instructional* purposes. This has involved their originators in the task both of seeking fruitful methods of production, and of assigning a rational function to the television component in relation to the other instructional means employed. In the pioneering *Telescuola* venture, different solutions were sought according to the nature of the participating audience. Where the task was that of making a compressed three-year school curriculum clear and comprehensible for children without other means of schooling, including those at the lowest mental and cultural level, whilst inducing them to play an active part in the learning process, a form of teaching closely resembling that provided in an ordinary classroom was adopted, with the emphasis placed on the leading role of the television teacher in each lesson. "Absolute clarity and simplicity of language" were the dominant motives in the organisation of lessons (p. 15). Alternatively, for adult illiterates lacking motivation for learning, and averse to ordinary schooling, greater emphasis was placed on television as a "spectacle" and a wide range of visual illustration was made use of.

In the Munich *Telekolleg* scheme, intended for those preparing for the entrance certificate to secondary schools, the close attention of the student to the matter presented, and the retention of detail has been sought by means of economy and restraint in presentation, "a television picture reduced to the bare essentials" (p. 27). Roderick MacLean, discussing an economics course, *The Standard of Living*, goes so far as to speak of these broadcasts as being "conceived primarily as acts of teaching rather than as television programmes" (p. 45). His paper on some British experiments in teaching adults by television develops forcefully the view that where the teaching of more or less specialised groups is concerned, the educationalist is seeking simply a use of the medium as a *distribution system*, and that he is not fundamentally concerned with the techniques or facilities which television may provide to improve his teaching. He contends, on the basis of reactions to these experiments and other evidence, that the serious adult student is not interested in – even resents

– "visual frills and trimmings" (p. 59). He indicates nevertheless that a younger, television-habituated audience will demand a fully professional television performance. This point of view is a useful antidote to the educational television producer's tendency to "fill in" with superfluous illustration, which does not contribute to the development of a teaching point or idea. It is interesting to note, however, that several of the projects discussed in this report have led to the discovery of new possibilities of visualisation offered by the medium, allowing the educator "to get across clearly subject matter which is very difficult to convey in words" (p. 27). A debate of this kind signifies the desire to rationalise the functions of television for teaching purposes which distinguishes the thinking of all the contributors to this symposium.

In the paper devoted to the planning of the British *Open University*, it is made clear that the main burden of the teaching operation will be carried by more conventional means, in particular by correspondence tuition. While limited in scope, "the broadcasting side of the operation will nevertheless be its most novel and dramatic element" (p. 35). The essential nature of the activities accompanying any television teaching is frequently cited in these papers, and the necessity for the student to participate actively, not only during the act of viewing, but by home-study and group work through which he is able to internalise the teaching matter which has been presented.

A number of other interesting tendencies are apparent in the projects discussed – the application of some of the methods of programmed instruction to instructional television production, and to accompanying work sheets; the fruitful working-out of relations between professional television producers and educational authorities; most important, the utilisation of the medium for the benefit of disadvantaged sections of the public, for remedying deficiencies in the educational system and extending opportunities to large numbers for the gaining of further qualifications. The development of a certain community of thought is a natural and valuable outcome of opportunities "to pool experiences at a formative stage in the development of a new educational approach" (p. 83), such as are provided by seminars of this kind.

GRAEME KEMELFIELD, Leeds

FLETCHER, BASIL, *Universities in the Modern World*. Oxford: Pergamon 1968. pp. 170. 21/– (soft). 30/– (hard).

This brief book considers the growth of universities, the work of the university teacher, planning in universities, and the place of universities in society; and it covers not only universities in the English-speaking world, but a selection from universities as far apart (ideologically as well as geographically) as Moscow and Mexico. There are two ways to do this effectively in 170 pages. One is to develop some idea which unites the vast spread of activities: to write an essay in which the theme is more important than the facts. The other way is to give a synoptic sketch of the systems of higher education in a variety of countries, to show how (for example) university development is planned in the Soviet Union, France, and Britain.

Fletcher has chosen the second way. His book is a sober, factual study in grey, uncoloured by prejudices or convictions. Within these modest limits his book is effective. Indeed at a time when there is so much tendentious pamphleteering about universities and so much strident criticism, it is just as well to listen to an occasional voice quietly setting out the pros and cons for the expansion of higher education, the pastoral function of professors, the reform of curricula. The author is well-informed. His book will not tell the reader what to think, but it will tell the reader what to think about. There are very few references and the only bibliography is – as the author confesses – a "personal" one. To this reviewer it seems a curious personal selection, with inclusions which are as surprising as its omissions. But the serious student of comparative education would not find anything new in this book except its calm sense of balance.

Eric Ashby, Cambridge

Guillaumont, P., Garbe, D., Verdun, P., "Les dépenses d'enseignement au Sénégal." 1967. pp. 51. $ 2. 10/–. FF 7.

Mwingira, A. C., Pratt, S., "The Process of Educational Planning in Tanzania." 1967. pp. 102. $ 2. 10/–. FF 7.

Fougeyrollas, P., Sow, F., Valladon, F., "L'éducation des adultes au Sénégal." 1967. $ 1.50. 8/–. FF 5.50.

Cerych, L., "L'aide extérieure et la planification de l'éducation en Côte-d'Ivoire." 1967. pp. 49. $ 1.50. 8/–. FF 5.50.

Wheeler, A. C. R., "The Organization of Educational Planning in Nigeria." 1967. pp. 68. $ 2. 12/–. FF 7.

Cerych, L., "The Integration of External Assistance with Educational Planning in Nigeria." 1967. pp. 78. $ 2. 10/–. FF 7.

Callaway, A., Musone, A., "Financing of Education in Nigeria." 1967. pp. 150. $ 3. 18/–. FF 10.50.

King, J., "Planning Non-Formal Education in Tanzania." 1967. pp. 40. $ 1.50. 8/–. FF 5.50.

Series: *African Research Monographs*. Nos. 5, 10–16. Published by the International Institute for Educational Planning (IIEP), Paris.

These eight pamphlets form part of a series launched two years ago by IIEP. The first eight in the series were reviewed in this journal in 1967.*) The present batch does little to revise the view then expressed that these are simply descriptive case-studies, useful no doubt for teaching, but disseminating knowledge rather than advancing it.

Two of the pamphlets deal with the costing of educational plans: the one on Senegal is a standard analysis of costs and sources of finance by levels of education; the one on Nigeria is a more ambitious reconstruction of unit costs and financial flows at every level of the Nigerian educational system in all three regions over an eleven-year period (1952–63), with a valuable bibliographical essay on educational planning in Nigeria since independence thrown in as a bonus.

Another two pamphlets take up the much neglected question of out-of-school education. The Senegal publication simply offers a sketchy description of current

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*) Cf. Special Issue *Book Reviews*, Vol. XIII/1967, pp. 48–50.

Senegalese activities in adult education. Miss King's pamphlet on Tanzania, on the other hand, provides a really valuable description of the magnitude and character of Tanzania's efforts in the fields of adult literacy, community development, agricultural extension, and in-service training, together with a discussion of the difficulties of integrating these services into the planning of formal education.

L. Cerych, the author of a well-known book on aid to education in developing countries, estimates the total amount and distribution of external aid for education in the Ivory Coast and in Nigeria. The Ivory Coast pamphlet, in particular, contains an interesting discussion of the case for sending students to study abroad.

This leaves the Mwingira-Pratt pamphlet on Tanzania, a detailed description of the actual process of educational planning in Tanzania as exemplified by the new five-year development plan for educating (1964–69), and Wheeler's pamphlet on the administration of educational planning in Nigeria.

The entire series of sixteen monographs will be useful to educational planners in Middle Africa, and indispensable as illustrative material to teachers of educational planners and administrators from developing countries. Nevertheless, there are few surprises here for students and scholars of African education. Perhaps that was not intended. But in that case, why call them "research monographs"?

MARK BLAUG, London

HACQUAERT, ARMAND, *The Recruitment and Training of University Teachers*. Ghent: International Association of University Professors and Lecturers (I.A.U.P.L.) 1967. pp. 223. BF 300. $ 6.

This book is a comparative survey of university manpower in these 16 countries: Argentina, Australia, Belgium, Canada, Cuba, Ethiopia, France, Germany, Hungary, India, The Netherlands, Poland, Uganda, the U.S.S.R., the United Kingdom, and the U.S.A. The survey was commissioned by Unesco and undertaken by I.A.U.P.L., which earlier published *The Survey of University Teachers*, edited by R. H. Shryock (Ghent: I.A.U.P.L. 1961), and which has been concerned since its founding in 1944 with world university matters. Part II of the book contains chapters describing relevant university staff recruiting and training problems and prospects in the 16 countries, each written by a specialist in higher education in that country, and some of them containing useful bibliographies. Part I contains three introductory chapters by Professor Armand Hacquaert of the University of Ghent and Secretary-General of I.A.U.P.L., surveying the general picture of university manpower. This introductory section points up the significant increase in both the number of and enrollments in world institutions of higher education, as evidenced in the 69 new universities established in Latin America from 1945 to 1962; the 7 new universities established in Australia from 1945 to 1965; and similar dramatic increases elsewhere. The trend in new universities, new courses, new departments, and expanded facilities in established universities is clear. Staff recruitment in keeping with this growth has understandably become acute. This recruitment in industrial nations is hampered by the higher salaries offered by the economic sector and in developing countries it is complicated by the limited reservoir of qualified talent and the lack of money to attract university specialists from abroad.

The survey indicates that recruitment of university staffs pays primary attention to the highest degree earned and too little attention to the potential recruits' demonstrated or potential teaching ability. This pattern places a limitation on innovative teaching methods. Professor Hacquaert comments: "It is therefore not surprising that young teachers prefer to apply themselves to... their publications, rather than to spend much of their time with the introduction of new teaching techniques, since it is on their scientific publications that their future depends" (page 19). Despite increasing recognition for in-service upgrading of new teaching staffs, there are only desultory attempts to help new university teachers improve their teaching techniques. An earlier pattern of secondary school teachers, who are concerned with improved teaching, rising to university teaching posts, is no longer as true as it once was, and most new appointees do not have teaching experience at the lower levels. The need exists to help new staff gain teaching proficiency through short pedagogic seminars or through an initial supervised internship stage.

The prospects of recruiting talent into university teaching and research as a lifetime career depends on tenure, which varies from institution to institution and country to country; on salaries, which have increased but perhaps not sufficiently in terms of actual purchasing power; on interesting working conditions, which universities do invariably offer; and on promotions to upper academic ranks, which is frequently delayed so that good candidates tire of waiting and often leave university posts for more rapid advancement in industry. There is also a good deal of mobility among university staffs which can limit stability and efficiency. The so-called "Brain Drain" tends to draw away from developing countries the best potential candidates for university staffs. Moreover, famous universities act as magnetic attractions on the national as well as international levels. Exchange professorships appear to be on the rise and these are beneficial for short periods but frequently harmful for longer periods.

In general, this survey provides a useful picture of recent trends in the recruiting, training, and retention of university staffs. It is a cautious work and while suggestions and opinions of some individual authorities are given, there is little in the way of specific recommendations made in the study. It is hoped that further studies by the I.A.U.P.L. may project statistics and trends a decade or more hence, which this book does not do, and make more specific recommendations to guide the policy formulations of national associations of higher education.

FRANKLIN PARKER, Morgantown, U.S.A.

HALLAK, JACQUES (selected by), *Educational Costs and Productivity*. Contributions to a seminar for professors of educational planning (economics) of the Regional Centres of Unesco, held at the International Institute for Educational Planning, 5–16 June 1967. Paris: IIEP 1967.

Die Haushalte der öffentlichen Hand, des Unternehmersektors und die privaten Haushalte sind in der Nachkriegszeit in Bewegung geraten. Das rasche wirtschaftliche Wachstum vollzog sich nicht in allen Bereichen in gleichem Maße. In jedem nach wirtschaftlichen Gesichtspunkten geführten System bilden auffällige Änderungen in der Ausgabenstruktur Anlaß zur Überprüfung der entsprechenden Be-

reiche. Dies trifft insbesondere für das Bildungs- und Unterrichtswesen zu. In den meisten Industrieländern wuchsen die Bildungsausgaben etwa doppelt so stark wie das Volkseinkommen.

Überproportionale Ausgabensteigerungen können sowohl Folge von entsprechenden Änderungen der Aktivitäten, Steigerungen der Faktorpreise als auch sinkender Produktivitäten sein.

Das IIEP-Seminar vom Juni 1967 behandelte diese Aspekte der Ausgabensteigerungen im Bildungswesen, wobei besonderes Gewicht auf die Erläuterung der Produktivitäts-Problematik gelegt wurde. Die Vermehrung der Aktivität im Bildungssektor wurde als Mittel zur Förderung des wirtschaftlichen Wachstums und zur Verwirklichung einer "gerechteren" Einkommensverteilung akzeptiert. Die Annahme konstanter Faktorpreise ist ohnehin Vorbedingung für die Berechnung von Produktivitätsmaßen.

Das einführende Referat von J. Hallak gab einen Überblick über die Vielfalt von Produktivitäts- und Effizienzmaßen, die in der Wirtschaftstheorie verwendet und auf das Gebiet der Bildungsökonomie übertragen werden. Die anfänglich gegebene Definition der Produktivität als Quotient aus dem Ergebnis und dem Aufwand einer Aktivität erwies sich bei Quantifizierungsversuchen als zu allgemein: die Fragestellung determiniert die Definition des Produktivitätsbegriffs.

Die in der Produktionstheorie üblichen Größen werden auch in der Bildungsökonomie zur Quantifizierung von Einheitskosten und Produktivitäten benutzt: einer bestimmten Produktivitätssteigerung entspricht eine proportionale Kostensenkung pro Einheit. *Ex definitione* fallen damit dieselben Schwierigkeiten bei Produktivitätsmessungen und der Berechnung von Einheitskosten an.

J. P. Gern zeigte die theoretischen und technischen Probleme zur Berechnung von Einheitskosten auf, die zusammen mit Einkommensentwicklungen Angaben über die Produktivitätsverhältnisse der Bildungsausgaben inbezug auf das wirtschaftliche Wachstum erlauben. Auch dieser Beitrag wies einmal mehr auf die für das Seminar typische Diskrepanz zwischen theoretischen Erkenntnissen und ihrer Anwendbarkeit für empirische Untersuchungen hin. Als *Output*-Einheit wurde – trotz vieler Bedenken – die Schülerzahl gewählt, obwohl diese das Ausbildungsergebnis, selbst wenn der Umfang des Wissens gemessen und bewertet wird, nicht ohne weiteres wiedergibt. Der Wert einer Ausbildung ist nur in Relation zur gesellschaftlichen Umgebung zu sehen. Da sich aber Ausbildung und Umgebung in einem simultanen Prozeß entwickeln und gegenseitig beeinflussen, ist diese Komponente nur schwer zu determinieren. Die Erfassung der Kosten beschränkte sich auf die Ausgaben der öffentlichen Hand und der privaten Unterrichts-Institutionen, obwohl diese Aufwendungen nur Bruchteile der effektiven Kosten sind, die bei der Frage, wie groß der Kostenanteil der Ausbildung im Verhältnis zum wirtschaftlichen Wachstum ist, berücksichtigt werden müßten. Sowohl bei Querschnitts- als auch bei Zeitreihen-Analysen spielt dieses Argument eine Rolle, wenn der sehr unterschiedliche Beitrag des Elternhauses, der Unternehmen, des Militärs usw. zur Ausbildung eines Individuums nicht im Zusammenhang mit dem Wohlstandsniveau gesehen wird.

In der Erkenntnis, daß *ein* ideales Produktivitätsmaß für empirische Untersuchungen unbrauchbar ist, versuchte der Beitrag von M. Woodhall "Productivity Trends in British Secondary Education" alle denkbaren Einflüsse, welche die Qualität von Produktivitätsvergleichen beeinträchtigen, in Rechnung zu stellen. Als *Output* der betreffenden Schulart wurden die Absolventen mit drei verschiedenen Indizes gewichtet: die Bewertung, als Maß für die Unterrichtsqualität, erfolgte

einmal über die erzielten Durchschnittseinkommen der Absolventen, über die Ausbildungsdauer und über die mit Erfolg absolvierten Examen. Ähnlich differenziert war das Vorgehen auf der *Input*-Seite. Sowohl die Aufwendungen für die zeitliche Inanspruchnahme der Lehrer als auch der Schüler werden deflationiert, wobei für die Schüler *opportunity costs* in Form von Durchschnittseinkommen gleichaltriger Jugendlicher berechnet wurden. Die Kapital-*Inputs*, die im wesentlichen aus Baukosten bestehen, wurden nach bestimmten Mietsätzen berechnet, um einmal die Bauzyklen, die die einmaligen Ausgaben stark verzerren und zum andern die *opportunity costs* des Kapitals zu berücksichtigen. Zusammen mit der deflationierten Entwicklung der restlichen *Inputs* ergeben sich sinkende Produktivitäten im Schulwesen. Die tendenzielle Übereinstimmung der drei Varianten wurde als Beweis der Zuverlässigkeit der Ergebnisse gewertet.

F. WALZ, Basel

IBE/UNESCO, *International Yearbook of Education 1966*. Geneva/Paris: IBE/UNESCO 1967. pp. 452. Sfr. 36. 60/–. $ 12.

The main innovation in this *International Yearbook of Education 1966* is the inclusion of a section on "The Organization of Educational and Vocational Guidance," pp. LVII–LXVII, from 47 of the 91 governments which submitted a report on educational trends in their respective countries in 1965–1966. Coverage of information on this aspect of education is the result of a recommendation (No. 56) adopted in 1963 by the XXVIth Session of the International Conference on Public Education, calling on governments to organize "an educational and vocational guidance system that would ensure each child the full development of his aptitudes, the full exploitation of his capacities, and the broadening of his personality by a judicious choice of his school curriculum, and later, of his profession and trade." A questionnaire was prepared in 1966 to solicit information on what governments had accomplished in educational and vocational guidance and the new section synthesizes this information. The full import of this innovation becomes clearer when one realizes that an international educational body has exerted beneficial influence on a section of world governments to improve some important aspect of their public education, has collected information on what has been accomplished in this regard, and then presented this information for all to see.

In other respects the *International Yearbook of Education 1966* follows the pattern of previous editions, going back to 1933, which has made the series a unique and permanent reference work. The preliminary sections cover reports from 84 countries on Financing Education (budgets with increases or decreases over the previous year, state proportions, and gross national income proportions); Number of Pupils and Teachers; Structure and Organization of Education; Curricula, Syllabuses and Methods; and Teaching Staff. Again, the bulk of the Yearbook consists of pertinent and abbreviated facts and statistics from the annual reports of the Ministries of Education of 95 countries. There is a useful list of leading officials in the Ministries of Education, and finally, there are eight important statistical tables summarizing the major educational statistics for quick reference and for comparative purposes.

FRANKLIN PARKER, Morgantown, U.S.A.

KNOLL, JOACHIM H., SIEBERT, HORST, *Erwachsenenbildung in der Bundesrepublik. Dokumente 1945–1966.* Heidelberg: Quelle und Meyer 1967. 167 S. DM 14.80.

Eine Sammlung von Dokumenten zur Entwicklung der westdeutschen Erwachsenenbildung seit 1945 hat bisher gefehlt. Sie ist nunmehr von dem Bochumer Professor J. H. Knoll und seinem Mitarbeiter H. Siebert unternommen worden. Ein solches Unternehmen ist verdienstvoll. Es ist im großen und ganzen gelungen, eine repräsentative Auswahl zu treffen. In fünf Kapiteln werden: "Dokumente zum Selbstverständnis der Erwachsenenbildung", "Entwicklungspläne und Gesetze zur Erwachsenenbildung", "Stellungnahmen der Parteien zur Erwachsenenbildung", "Stellungnahmen und Empfehlungen anderer Institutionen zur Erwachsenenbildung", und schließlich eine Zusammenfassung der Ergebnisse empirischer Untersuchungen zur Situation der Erwachsenenbildung, die 1966 von der Pädagogischen Arbeitsstelle des Deutschen Volkshochschul-Verbandes herausgegeben wurde, zusammengestellt.

Mit Recht weisen die Herausgeber darauf hin, daß eine solche Sammlung immer nur eine Auswahl sein kann. Man muß dann aber fragen, ob die Auswahl der Vielfalt der Erscheinungen gerecht wird. Das ist in diesem Band nicht immer der Fall. Man merkt manchmal etwas zu deutlich den geographisch-bildungspolitischen Standort der Herausgeber; man merkt, daß Bochum im Land Nordrhein-Westfalen liegt. Auch hätten wir manche Kürzung und manche Erweiterungen gewünscht, um das Bild der letzten Entwicklung der deutschen Erwachsenenbildung und der gegenwärtigen Tendenzen noch deutlicher und lebendiger zu machen. So hätten wohl besser (um den Preis von Kürzungen des vollständig abgedruckten zweiten Kapitels aus dem Gutachten des Deutschen Ausschusses für das Erziehungs- und Bildungswesen von 1960) die kurzen Abschnitte über "Ausbildung und Bildung", "Politik", "Hochschule und freie Erwachsenenbildung" und die Ausführungen über die "Volkshochschule neuen Typs" abgedruckt werden sollen, die im Teil "Abendvolkshochschule" enthalten sind; denn diese konkreten Darstellungen und Empfehlungen haben spürbaren Einfluß gehabt auf die gegenwärtige Entwicklung bzw. Neuorientierung der westdeutschen Erwachsenenbildung. – Außerdem muß festgestellt werden, daß, während in den Unterabteilungen "Arbeit und Leben" und "Konfessionelle Erwachsenenbildung" manche Wiederholungen sind, die universitäre Erwachsenenbildung und die ländliche Erwachsenenbildung kaum bzw. gar nicht vertreten sind. Auch ist zu bedauern, daß die interessanten Entwicklungen des Arbeitskreises "Arbeit und Leben" und der Evangelischen Akademien in der Zeit zwischen 1947 und 1950 durch keine Zeugnisse belegt sind.

Auf einige sachliche Fehler bzw. Ungenauigkeiten sei hingewiesen:

1. In der Anmerkung von S. 56 steht ein falsches Datum: eine im Jahr 1962 gefaßte Resolution konnte wohl nicht schon in einer Zeitschrift des Jahres 1953 abgedruckt werden.
2. Das auf S. 131 zitierte "Blaue Gutachten" von 1948 wird zu Unrecht der Westdeutschen Rektorenkonferenz zugewiesen. Das Gutachten wurde am 26.10.1948 abgeschlossen, die Westdeutsche Rektorenkonferenz am 21.4.1949 gegründet. Das Gutachten wurde vom Militärgouverneur für die Britische Besatzungszone in Auftrag gegeben, der auch den Studienausschuß berief, der das Gutachten erstattete.

3. Es genügt nicht, wenn auf S. 140 unter "Unesco" eine Erwachsenenbildungskonferenz zitiert wird, die bestimmte Empfehlungen über "Erwachsenenbildung in einer hochindustrialisierten Gesellschaft" gefaßt hat. Hier sollte bemerkt werden, daß es sich um eine europäische Konferenz der Unesco handelt, die in Hamburg 1962 tagte und für Europa die Beratungen der Unesco-Konferenz von Montreal (1960) fortsetzte.

Auch das Beiwerk, mit dem die Herausgeber die einzelnen Teile ihrer Sammlung einleiten, kann nicht ohne Bedenken hingenommen werden. Gewiß ist anzuerkennen, daß die Vorbemerkungen zu den einzelnen Kapiteln wohltuend knapp gehalten sind. Es besteht aber die Gefahr, daß sie in der Kürze zu wenig besagen. So wird die Vorbemerkung auf S. 131 zu einer Ansammlung von zum Teil substanzlosen, zum Teil sachlich unhaltbaren Allgemeinplätzen. Leider muß dieser Einwand auch gegenüber der Einleitung gelten. Hier rächt es sich, daß seit dem "Schicksal der Volksbildung in Deutschland" von Werner Picht (1. Auflage 1936, 2. veränderte Aufl. 1950) keine wissenschaftlich haltbare geschichtliche Darstellung der deutschen Erwachsenenbildung erschienen ist. Über diese Lücke kann man nicht mit einigen forsch-fröhlichen Sätzen hinwegspringen, – der flotte Stil kann die gebotene sachliche Gediegenheit nicht ersetzen. Gewiß ist dem Verfasser darin beizupflichten, "daß die Verbeugung vor den zwanziger Jahren nicht für eine Wirklichkeitsbewältigung in unseren Tagen angetan ist". Aber wer verbeugt sich denn? Es muß festgestellt werden, daß mangelhaft begründete polemische Ausfälle und Legenden über die Geschichte der deutschen Erwachsenenbildung ihr heute keinen Schritt weiterhelfen in dem Bemühen, ihren Ort und ihre Funktion im deutschen Bildungswesen und in der deutschen Gesellschaft der Gegenwart und Zukunft zu bestimmen.

Der Mangel an Kenntnissen vom Volkshochschulwesen der zwanziger Jahre zeigt sich auch in den Ausführungen über "Langfristige Kurse", Arbeiterbildung und das Verhältnis der Erwachsenenbildung zum Staat. Es sollte dem Verfasser bekannt sein, daß die Heimvolkshochschulen nicht erst nach 1945 in Deutschland entstanden sind, ja daß solche Schulen mit langen, verbindlichen Lehrgängen in der Weimarer Republik besser entwickelt und fundiert waren als heute. Auch sollte der Verfasser zur Kenntnis nehmen, daß mit dem Volkshochschulwesen der Weimarer Zeit zumindest in Sachsen und Thüringen eine lebendige Arbeiterbildung verbunden war, deren wirksamer Kern freilich nicht in der beruflichen Schulung, sondern in der gesellschaftlich-politischen Bildung lag. – Was sodann über die von der modernen Gesellschaft geforderte Neuorientierung der westdeutschen Erwachsenenbildung gesagt wird, bleibt an der Oberfläche und geht an der realen Aufgabenstellung vorbei. Man kann die Problematik, die sich hier für den Pädagogen wie für den Gesellschaftspolitiker ergibt, nicht mit einigen glatten Formulierungen wie "Lebenshilfe, Berufshilfe, Freizeithilfe" oder "Arbeitsgemeinschaft, Seminar, Hobby-Kurs" darstellen und dabei die zentrale politische Aufgabe der Erwachsenenbildung in der modernen Demokratie ganz übersehen.

Das Vorbeisehen an der politischen Problematik zeigt sich auch in den etwas leichten, ja leichtfertigen Bemerkungen über das Verhältnis der Erwachsenenbildung zum Staat. Oder sollten "vested interests" des "Bochumer Plans" gegenüber dem Landesherrn diese staatsfreudigen Bemerkungen veranlaßt haben?

Wenn schließlich mit Recht betont wird, daß in der modernen Gesellschaft einer systematischen Zusammenarbeit von Universität und Erwachsenenbildung erhöhte Bedeutung zukommt, so ist leider auch hier die Skizze dieser Zusammenarbeit nicht frei von Mißverständnissen und Kurzschlüssen.

Diese Einwände müssen um der Sache willen gemacht werden. Sie warnen den Leser, der die Fakten und Zusammenhänge nicht kennt, davor, seine Vorstellung von der Entwicklung und von den heutigen Problemen der deutschen Erwachsenenbildung durch die Einleitung und die Kommentare der Herausgeber beeinflussen zu lassen. Die Dokumente müssen für sich selbst sprechen, und wir wollen das Verdienst dieses Buches als einer ersten Dokumentensammlung nicht schmälern. Eine Dokumentensammlung ist aber keine gültige Darstellung der Geschichte oder der heute von uns geforderten gesellschaftspolitischen Entwicklung der westdeutschen Erwachsenenbildung. Es ist dringend zu wünschen, daß solche Darstellungen in den nächsten Jahren mit eingehender Sachkenntnis und sachverständigem Urteil geschrieben werden.

FRITZ BORINSKI, Berlin

LYALL, ALETHEA (ed.), *History Syllabuses and a World Perspective. A Comparative Survey of Examination Syllabuses in Britain and Overseas.* London: Longmans, Green 1967. pp. 171. 11/6.

This small volume contains a very useful, interesting, and well done collection of history syllabi from fourteen countries. It focuses on various national syllabi which have a distinctive international or "world" flavor. The Parliamentary Group, devoted as it is to "world government," has supported the publication of representative course and examinations outlines "in Britain and overseas" which will help to further contemporary international understanding.

1. *Purpose*: This book is intended for history, geography, and social studies teachers throughout the world, so that they may reform themselves, their students, and their societies through two important vehicles of educational change – namely, the course outline and the examinations system. The editor identifies the teacher, and rightly so, as a *force majeur* for educational innovation. Yet this book also tries to point out the elements of similarity and difference in teacher approach to "one world" education. Furthermore, the reader finds that he is learning about educational change in Britain, particularly in the modern schools and the colleges of education, as well as about specific attempts to balance individual loyalties (oftentimes conflicting) to one's nation and to humanity. Thereafter follows an example (which won a £ 100 first place award in a competition) of a syllabus which sets out guide-lines for those curriculum builders who wish to present students with a social studies course having a dual national and world perspective and balanced loyalties to the nation, the world, and to humanity itself. We also have a quick survey of what is happening "overseas" in social studies, history, and geography.

In all, there are five major parts to this book. Part I surveys syllabuses in Great Britain for "O" and "A" level examinations for the General Certificate of Education (G.C.E.) for university admittance. Part II presents fourteen British examinations boards for the Certificate of Secondary Education (C.S.E.). The third part presents a report on the teaching of world affairs in British Colleges of Education, while Part IV contains syllabi from thirteen different countries. Part V, as previously mentioned, is a detailed prize winning syllabus of composite modern studies for the G.C.E. "O" level including a specimen examination paper and notes on the content of this particular syllabus. Thereafter follows a six page selected bibliography of books, articles, audio visual materials, textbooks, and periodicals which can aid the teacher seeking to develop the world perspective theme in history or other social studies courses.

Within this limited scope, *History Syllabuses and a World Perspective* does achieve its objective. Yet the purpose is a large one, and the reader is constantly impressed by the provincialism as well as the cosmopolitanism of the social studies curriculum in England and the other countries whose syllabi are surveyed. The small amount of truly international education taught today becomes readily apparent as one reads these carefully selected models. And the same is true for the approach and time periods emphasized in these syllabi – that is, the world perspective seems often to end abruptly in 1945, and the treatment seems to be solidly and stolidly historical. Contemporary affairs, as with the findings and methodologies of the social sciences (anthropology, sociology, political science, etc.), are very conspicuous by their absence in the vast majority of these syllabi. This deficiency is only partially, yet encouragingly, overcome by the model syllabus in Part V. Yet this is more a criticism of present educational reality than of this survey of this reality. One can only try to report what exists with a minimum of distortion, and this the book admirably succeeds in doing.

2. *Technical Proficiency*: This book, like the many others in the Education Today Series, is well written, attractively presented and well organized, and amply footnoted. It suffers from only one typographical error and is a sturdy enough paperback to provide useful library or classroom service as a reference or text. The work is well researched and enjoys the benefit of contributions from reporters and experts from many lands. In a word, it is technically proficient and fills a gap in the comparative education literature.

3. *Representativeness*: When one considers the representativeness of the syllabi presented in this volume, however, this work can be scored. Well over half of the book is devoted to secondary school historical study in Great Britain. Other countries are left to be represented by one sample syllabus, even when no national curriculum exists or the educational system is decentralized or federal, rather than unitary or centralized. Thanks to depth of coverage, this is not a serious problem when it comes to Great Britain where local educational autonomy is still the rule despite the centralizing influence of the examinations system. Nor is it very serious in the case of West Germany, thanks to the excellent summary of history teaching in the eleven Länder and the representative German syllabi presented for reading. By the same token, the Japanese curriculum is well represented in this volume. Yet, such is certainly not the case with Australia, Canada, and the United States, for instance. There the curriculum of one or two states or provinces in each federal system is used as an illustration of either typical or good history or social studies teaching to encourage the students' world perspective'. For instance, neither the social studies curriculum guide of New York State, nor the guide-lines developed by the National Council for the Social Studies can be taken as documents which determine the degree of relevance which current history or social studies teaching in the United States has to the world perspective theme of this book. There are many other important and relevant social studies courses in the United States. For example, there is the typical Problems of Democracy, American Government or International Relations course, which goes beyond the American or World History course in encouraging a world perspective and broadened horizons of loyalty. Thus the syllabus and the state chosen to reflect the United States, as with Australia

and Canada, are neither representative nor typical of history or social studies instruction in this country. Much better sampling would be required to achieve this purpose.

In a similar vein, and this applies to all of the syllabi presented, there is a decided lack of editorial comment or explanation of just who is using each of these syllabi. That is, there is little or no discussion of streaming or the track system, school type, and the like. The reader would be more enlightened if he knew just how many students in West Germany were following the syllabus outline, whether they were taking the scientific or humanities course of study in the gymnasium, and whether they were unique in other ways, e.g., in terms of sex, college preparation, etc. Much the same criticism applies to England itself where the public (private) schools, the grammar schools, the technical or trade schools, the secondary modern, and the new and growing comprehensive school have vastly different pupils in terms of numbers previous preparation, educational objectives, etc. In sum, more background information and basic statistics are needed to evaluate these syllabi than the mere description of an ideal type itself.

4. *Usefulness*: Despite the shortcomings mentioned in passing above, this book is of great practical value for the teacher and for the English reader. It summarizes with clarity the major trends in history teaching and examinations in Great Britain. This is no small task, for the anarchy of the British educational system has long defied description by national and foreign scholars alike – especially in the history and social studies areas. The book will also serve as a useful comparative guide for Englishmen and those "overseas" who wish to keep abreast of recent developments in history and social studies teaching and examinations throughout the world. This certainly speaks well for its practicality and usefulness for teacher and scholar alike.

5. *Deficiencies and Strengths*: The most obvious deficiencies and strengths of *History Syllabuses and a World Perspective* have been detailed above. The volume accomplishes its purpose, is technically proficient, lacks representativeness in some of its examples of national syllabi and lacks sufficient editorial comment, and yet is useful for its intended audience. There is one major and overriding strength which needs reemphasis, however, and that concerns its thorough treatment of history teaching and examinations in Great Britain. For instance, suppose one asks an informed British academician if there is any political, civic, or citizenship education in England which teaches something about the functions and organization of Parliament or the British Constitution. If so, he will usually hear that there is not only a lack of such teaching (because such things are taken for granted), but, furthermore, that there is *no* British Constitution! Yet as one reads this volume, he cannot but be amazed to see the amount which is actually taught about Parliament and the Constitution, though using the vehicle of history, to be sure. Words such as civics, world citizenship, national citizenship, and Constitution are as abundant as those having reference to communist theory and the United Nations – and the same is true of many examinations papers. This little book is worth reading if for no other reason than that one thereafter can document the nature and degree of political education in England. In this respect, it makes a fine companion volume to the work already done by Richard Rose and Anthony Sampson on political socialization in England.

RUSSELL F. FARNEN, Nashville, USA

LYNTON, ROLF P. and PAREEK, UDAI, *Training for Development.* Homewood/USA: Irwin and Dorsey 1967. pp. 408.

Opinions on this book are likely to vary widely, according to research and professional biases. From one point of view, it is a rather comprehensive work, covering foundations of training practice, phases of training, personnel and institutions involved, and planning determinants. In specifying training as dealing with "people-on-jobs-in-organizations," the authors attempt to identify the necessary interconnections in training considerations, and to bring together factors of theory, research, planning and action for effective training decisions in a developmental framework.

The usefulness of this approach is especially evident in the early chapter on Training Strategy, in which content-process and concept-job-organization continua are related to training goals and procedures. The reader, whatever his academic persuasion, will also find himself absorbed in the analyses of personal-institutional relationships, of environmental inconsistencies, of organization problems, and of functional training requirements in the later chapter on The Training Institution and The Future. That the analyses clarify rather than solve problems identified is perhaps indicative of the progress of the behavioral sciences, on which the book is supposed to be based; especially in administrative application of behavioral science, the analytic or diagnostic aspects tend to be much more developed than are the consequent action patterns.

Although the connection between theory and practice is not nearly as easily established or as evident as the authors intend, there is, in addition to the successful treatment of a training complex in the two chapters noted above, a quality of down-to-earth recognition of significant considerations in training, such as the influence of the local environment, the timing of training phases, the respective jurisdictions of work organization and training institution, the need to account for the participant's "back-home" concerns and for his mode of learning, and functional meanings of procedures (e.g., "All that participants may learn from a very heavy program is what it feels like to be under heavy pressure for a long time.")

If I have so far been vague about the specific reference of "training", it reflects the use of the term in the book. Initial attempts to distinguish between *education* and *training* along a personal growth – performance-of-task continuum or on the basis of cognitive learning vs. internalization of skills are oversimplified and raise more questions than they answer. Description of "skills in action" as including an understanding through several disciplines of the "complex processes by which various factors that make up the actual situation interact" only blurs the line of distinction further, as does the strange juxtaposition of *force* (as the "motive power of traditional relationships") and *training*, or the confusing equation of training with theory, practice with experience.

The authors are undaunted by the problem, however, and even choose explicitly at later points to ignore the distinction they took some pains to draw. This, of course, compounds the confusion, since we are apparently then reading a generalized account of training – applicable to business management, schools and universities, cooperative farming, technical trades, etc. – all of which are mentioned occasionally as illustrations. Methods are differentiated by type, but not according to particular objectives of training, situational appropriateness, or levels of achievement. Since every teacher is in a sense also a trainer, do the generalizations then apply equally to teacher training and to child training by teachers? It is more likely the case that the social, intellectual, and technical components of learning are task and situation specific; I suspect that, although generalization of training policies to all ages and programs may result in some gain in social unity, it causes untold waste and even harm where knowledge and skill are called for.

By attending to the struggles educators have had in the past with these questions, the authors might have at least clarified their generalizations – and been more careful about extremes. The frequent polarized representations ignore the intervening and related factors now recognized in learning. Descriptions of supporting research or of techniques are similarly unsophisticated or uncritical. For example, selected items are mentioned from a study of student ascriptions of the "mental activity" component in ten academic activities without furnishing information on the whole range of activities or rankings; support for a point is derived from a study in India based on a "quick check" of recall among members of a lecture audience; the results of a study of method effectiveness based on two groups concerned respectively with changing food habits and with production changes are cited, without suggesting alternative variables, such as the possible differential between food and production in personality terms.

Learning sequences for training participants tend to be described as strictly behavioristic even though a more complex framework of learning has been suggested generally. In their desire to deny an authoritarian role for the trainer, however, the authors seem to define an approach more appropriate to a therapist than to a teacher. It is undoubtedly in accord with the popular swings of social science to depict the trainer as part psychologist, part organization-man, – as one who seemingly requires no substantive knowledge, but only needs to manage the organization and interact skillfully with the people. But even in these respects, the specifics become hazy, mystical, simplistic, or platitudinous. After saying, for example, that the forces at work in a group can be understood and influenced, the authors proceed to a disguised traditional discussion of behavior rules which seem to be more applicable to children than to adults (I assume at this point that they are talking about adults).

Through the social-behavioral-science terminology, a scientific air at least is given to the discussion of procedures people have long found effective in doing things together. A group coming together without an appointed leader to work out mutual problems may be a "T-group"; a person trying to understand another's position by putting himself in the other's place may be "role-playing"; an attempt to look at the details of a particular instance in order to educe general characteristics may be a "case method"; etc. The tedious explanations of simple, human interactive techniques does not, however, provide us with any new insights on how to handle people in an instructional setting more effectively. In fact, the final word becomes "climate," "personality of the trainer," "new identity." "Finally... the nature, quality, and effectiveness of the interaction we call training depends primarily on the feelings that the trainer communicates to the participants through his behavior. From the next deeper level springs the training climate, a pervasive phenomenon that tends to self-fulfilling and self-reinforcing continuity" (p. 277). Now we have it – the artist-teacher in the good society.

The two readings by J. W. Getzels and H. A. Thelen ("The Training Group as a Social System") and C. D. Orth ("Two Training Groups Compared") show what can

be done with the subject from a theoretical or a case-study approach respectively. These still leave the task of integrating, which *Training for Development* promises to do. Unfortunately, "how to do" training does not suffice for what needs to be known in order to accomplish particular training tasks, nor does talk about action or information substitute for the substance or action itself. Both "training" and "development" incorporate a host of hard problems which require clean and rigorous thought, research, and practical work to solve.

ROBERT F. LAWSON, Calgary

MARKLUND, SIXTEN, SÖDERBERG, PÄR, *The Swedish Comprehensive School*. Translated by Albert Read. London: Longmans 1967. pp. 119. 15/–.

Über die schwedischen Schulreformen der sechziger Jahre gibt es bereits eine ganze Anzahl von Veröffentlichungen in englischer oder deutscher Sprache. Nirgendwo bisher sind jedoch die Aspekte, die zur Einführung der neunjährigen Grundschule in Schweden führten, so anschaulich – auch für ausländische Leser – dargestellt worden wie von Marklund und Söderberg.

In der ersten Hälfte des Buches wird ein historischer Überblick geboten u.a. über die theoretische Begründung der neuen Schulform, die bereits in den Jahren nach 1940 erfolgte, über die Versuchstätigkeit, die um 1950 begann, sich schnell ausbreitete und zu unterschiedlichen Differenzierungsmodellen führte, sowie über die Reichstagsbeschlüsse von 1962. In einem besonderen Kapitel wird über einige wissenschaftliche Untersuchungen berichtet, die den Schulversuchen vorangingen und sie später begleiteten. Dabei wird deutlich herausgestellt, daß bestimmte Untersuchungsergebnisse (u.a. die von Elmgren, Härnqvist und Svensson) zwar die Reichstagsbeschlüsse von 1962 beeinflußt haben, diese letztlich jedoch politische Entscheidungen mit Kompromißcharakter waren.

Im zweiten Teil des Buches wird die neunjährige schwedische Grundschule so dargestellt, wie sie gegenwärtig nahezu im ganzen Lande organisiert ist. Dabei wird in dem Abschnitt über den Schulalltag auf die Probleme der Individualisierung des Unterrichts und praktizierte Formen der Zusammenarbeit von Schülern unterschiedlicher Befähigung und aus verschiedenartigem sozialen Milieu näher eingegangen. Verschiedene Unterrichts- und Arbeitsformen (Frontalunterricht, Gruppenunterricht, Einzelunterricht, Gruppen- und Einzelarbeit) werden kurz skizziert, und in der Zusammenfassung wird herausgestellt, daß nur durch sinnvolle, häufig variierende Kombinationen optimale Erfolge erzielt werden können. In einem besonderen Kapitel wird die Verwendungsmöglichkeit neuer Lehr- und Lernmittel zur Steigerung der Effektivität des Unterrichts beschrieben. Auch den Fragen der Studien- und Berufsberatung innerhalb der Grundschule sind einige Seiten gewidmet.

Im letzten Abschnitt berichten Marklund und Söderberg über die ersten Erfahrungen, die man in Schweden mit der obligatorischen neunjährigen Grundschule gewonnen hat. Dabei wird nicht verschwiegen, daß manche Probleme – vor allem auch Differenzierungsfragen – noch nicht optimal gelöst sind. Die Verfasser zeigen Entwicklungstendenzen auf, die im Wege einer dynamischen Schulreform zu einer Neustrukturierung der Grundschul-Oberstufe (Kl. 7–9) führen dürften. Dabei werden

Vorschläge erwähnt, die freie Fächerwahl in den Klassen 7 und 8 weiter einzuschränken und den Bereich der für alle Schüler verbindlichen Kernfächer zu erweitern. Ganz aufgegeben werden soll wahrscheinlich die äußere Differenzierung in Züge, wie sie z. Zt. in den 9. Klassen vorgenommen wird. Die Möglichkeit einer noch stärkeren Integration auf dieser Schulstufe wird wiederholt herausgestellt; es wird auch klar gesehen, wie wichtig dann eine weitgehende innere Differenzierung des Unterrichts wird.

Nicht näher eingegangen wird in dem Buch jedoch auf die vielfältigen Forschungs- und Entwicklungsprojekte, die in Schweden bereits angelaufen sind – meist in Verbindung mit Lehrerhochschulen – ,wobei neues Arbeitsmaterial entwickelt und erprobt wird, das eine weitgehende innere Differenzierung und Individualisierung des Unterrichts in einer Reihe von Fächern erst ermöglicht. Ebenfalls kaum erwähnt werden die zahlreichen Veranstaltungen im Rahmen der Lehrerfortbildung und das dichte Konsulentennetz, wodurch erreicht werden soll, daß bereits im Dienst befindliche Lehrer mit neuen Methoden und neuem differenzierenden Arbeitsmaterial vertraut gemacht werden und Erfahrungen austauschen können.

Absicht der Verfasser war, einen leicht verständlichen Überblick über die Vorgeschichte und die gegenwärtige Organisation der neunjährigen Grundschule in Schweden zu bieten. Ihr Buch (Originaltitel: *Grundskolan – framväxt och organisation*) ist seit 1964 auch in Schweden rasch verbreitet worden. 1967 ist bereits eine dritte, neu bearbeitete, Auflage bei Bonniers, Stockholm, erschienen.

Zu der jetzt vorliegenden englischen Übersetzung hat Robert Pedley ein Vorwort geschrieben, in dem er die Entwicklung der britischen *Comprehensive Schools* mit der Schulentwicklung in Schweden vergleicht. Darin fällt manch bitteres Wort über das noch immer vorherrschende *streaming* in den meisten Gesamtschulen auf den britischen Inseln und die dort noch häufig anzutreffende negative Einstellung vieler Behörden, Schulleiter und Lehrer gegenüber zu revolutionär erscheinenden Neuerungen. Wie viel kritischer müßte man noch sein, wenn man die Schulentwicklung in Schweden mit der gegenwärtigen Situation in manchen Ländern auf dem europäischen Kontinent vergleicht!

Um auch deutschsprachige Leser mit der Vorgeschichte und der Organisationsform der neunjährigen schwedischen Grundschule näher vertraut zu machen, hat das Pädagogische Zentrum in Berlin eine Übersetzung der neugefaßten dritten Auflage des Buches von Marklund und Söderberg veranlaßt, die 1969 im Verlag J. Beltz, Weinheim und Berlin, erscheinen wird.

HORST MAGDEBURG, Berlin

OECD, *Social Objectives in Educational Planning*. Paris: Organisation for Economic Cooperation and Development 1967. pp. 309. DM 21.60. $ 6.50. 40/–.

This book is a recent product of the Organization for Economic Cooperation and Development, through its Study Group in the Economics of Education.

It gives an opportunity to trace a most interesting evolution of the thought of social scientists about the relations of education to socio-economic development in developed and underdeveloped societies. This particular Study Group was formed in 1962 and continued to hold meetings for the presentation of papers until 1965.

The Study Group has published, in addition to the book reviewed here, the following substantial works, mainly consisting of papers presented by members of the Study Group: *Economic Aspects of Higher Education*; *The Residual Factor and Economic Growth**); *Organizational Problems in Planning Educational Development*; *The Financing of Education for Economic Growth*.

In effect the Study Group took up the challenge to develop a workable theory of the relationship between educational and social structure. Members of the Study Group were: Henning Friis, Chairman; Michel Debeauvais; Friedrich Edding; Seymour Harris; Selma Mushkin; Raymond Poignant; Ingvar Svennilson; Jan Tinbergen; and John Vaizey. Only two of these people contributed to the present volume. The other writers are: C. Arnold Anderson, Torsten Husén, Natalie Rogoff Ramsøy, R. Ruiter, Rose Knight, John Westergaard, Alan Little, Olof Ruin, Pierre Laderrière, and Beresford Hayward. Leila Sussmann acted as Rapporteur, and wrote a very good Summary Review.

The midcentury writing about the relations between education and economic development has sometimes made the over-simple claim that economic development is a simple result caused by educational development, when capital and labor are adequate. But this proposition could not be proved in the case of a developed economy, such as the USA. And when it was applied to certain underdeveloped countries, it proved to be untrue. That is, when the educational factor was increased in certain underdeveloped countries, there was not an economic gain that could be clearly related to educational development.

An example of the over-simple approach to the relation of education to economic development is given by the process which is called "manpower planning." In this procedure, the numbers of workers with various kinds of skills are calculated in relation to certain goals of economic production, and then the plans for the educational system are made to include the education and training of these numbers of workers. This has worked best in certain socialist countries where the flow of capital and labor can be controlled by the government and where much of the training is done by the factory or production unit rather than by schools. In other countries, this procedure has not worked well. It has resulted in an oversupply of people educated to certain levels who then cannot find jobs.

An improvement on the manpower-planning approach is the "human resources planning" approach. Here, the human being is considered not only as a unit of manpower but also as a resource for other goals of society – such as civic development, and esthetic development. In this case, education is seen as a consumer good as well as a producer good.

With the goal of education seen as the optimal development of human resources, the objectives of an educational system become more broadly social rather than narrowly economic. This Study Group has operated in terms of social objectives.

The papers and the discussion of this book centered on the means of obtaining "equality of educational opportunity." An important thing about the papers was the definition of equality of opportunity. Three different meanings were recognized:

1. Equal access to secondary and higher education for all youth of equivalent measured ability – the characteristic European definition, until quite recently.

2. Equal rates of participation in secondary and higher education by members of all social classes – a definition more commonly used in the USA, which leaves out

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*) see review in the International Review of Education, Vol. XII/1/1966, p. 115.

of account the unequal social class distribution of conventionally measured academic ability.

3. Equal opportunity to acquire academic ability for youth of all social classes. This is a radical definition which is now gaining currency as we learn more about the experiential basis of academic ability, and become convinced that the distribution of innate ability is the same or nearly the same in all social classes.

The papers in this book do not go very far in this third definition, but it is latent, at least, in the second section, entitled "Policies Looking Toward Equalization of Educational Opportunity." The most active treatment of this theme is given by Selma Mushkin, of the USA, who describes several American programs, especially Head Start for pre-school children, which are aimed at raising the IQ or academic ability level of socially disadvantaged children.

The major value of the book lies in its collection and presentation of data from several countries bearing on the common problem. The first section has substantive papers on Sweden, the USA, Holland, and a paper by Rose Knight, comparing university entrants in six European countries and the United States, as well as an "idea piece" on sociological factors in the demand for education by C. Arnold Anderson, and a very brief paper by John Vaizey arguing that equal opportunity for education is probably impossible as long as income is unequally distributed.

When information from only one country is available to a student of the sociology of education, he is likely to confuse relations among his data which are due to the particular national culture and the unique national history of this country with universal relationships or with relationships that are common among societies of a given level of socioeconomic development. Anderson had previously shown that certain relationships existing in the USA between higher education and social class membership did not apply in some Western European countries.

The analytic papers in this volume begin to show some common relationships between social structure and education – common to Western Europe and the USA – as well as some differences. For instance, Holland, Sweden, and the USA are rather different in the relations between social class and middle-level education during the past two or three decades. On the other hand, it seems that in all the countries studied, as enrollment in secondary and higher education increases the higher status groups get a disproportionate share of places until their demand for these places is satisfied, after which the next higher group expands its enrollment until it approaches its optimum, and so on, with the lowest social class the last to gain much opportunity. In other words, differential participation between the social classes in non-compulsory education is not lessened by expansion of the educational system until the higher groups reach a ceiling.

This book is notable and useful chiefly because it uses a comparative approach to the study of the relations between social structure and the educational system. It will soon be out of date, as far as its data are concerned, because the latest data presented are for 1962 to 1963; and the great increase in birth-rates following World War II caused a sudden and sustained jump of 20 to 40 percent in the age cohorts from which middle school and university students come – this jump beginning to take effect only in the early 1960s. With this sharp increase in the reservoir from which students are drawn, the educational policies related to equality of opportunity are just now showing the effects. It is not yet known whether methods adopted to increase educational opportunity will work successfully when the numbers of potential students increase sharply.

ROBERT J. HAVIGHURST, Chicago

Osborne, G. S., *Change in Scottish Education.* London: Longmans 1968. pp. 181. 18/–.

The title of this paperback gives little clue to the mass of information and observations which it contains. Within its 181 pages it concludes a review of most of the important changes that have taken place in Scottish education in the last four hundred years and discusses some of the problems which face educationists today.

In his description and discussion of the changes in the Scottish system, the author introduces useful references to the systems of other countries, especially England. It is not always known to educationists abroad that the Scottish and English systems differ so fundamentally, the statutory bases being different. In making these comparisons the author has no doubt been helped by his previous experience in educational administration in an English county and by his present experience as Vice-Principal of a Scottish college of education, in which teachers are trained for all types of school.

The three sections of the book deal with higher education, secondary education, and primary education, but this is no catalogue of Acts of Parliament or departmental circulars. The headings of the chapters and sections, e.g. the transmission of culture, philosophy and professionalism, the democratic tradition, indicate the level of discussion.

The description of the Scottish University ordinary degree leads to a discussion of the question of specialisation in university and school courses and to the relation between teachers and taught. From this we are led to a discussion of the nature of the Scottish Certificate of Education, which provides the main entrance qualification to higher education. This in turn leads to the problem of the sixth year in secondary schools, which is under discussion by Scottish teachers at present. There is in most Scottish schools no sixth form of the English type leading to A level examinations and the scope of the year, and the type of examination that might or might not be held at the end of it, are matters of controversy.

The democratic tradition has for long been a pride of Scottish education. In these days of debate on comprehensive education it is important to remember that the Scottish interpretation of equality of opportunity was to make secondary and higher education available to all *who had the ability and the desire to profit from it.* The comprehensive principle as it is now stated tends to minimise differences between children; the Scottish system tended to stabilise and increase these differences by allocating the abler children to more demanding courses. The allocation was a generous one; in 1964 it was about 40 per cent of an age group, compared with 20 per cent in England, and many of the pupils did not continue at school long enough to attempt 0 grade examination at about the age of 16. This the author describes as "enormous wastage" and devotes a section to a study of the problem. But is "wastage" the correct term? If an able boy took the stiffer course but left at the age of 15 to become a plumber, is this wastage? During the three years of the course he studied mathematics and science at a more demanding level than he would have done in the non-academic course, and was introduced to a foreign language. We hope he will become an intelligent plumber. If he had taken the less demanding course he would not have been included in the "wastage" numbers. Perhaps we should look for the *real* wastage among the 80 per cent who were not admitted to academic courses in England!

The section on primary education starts with a chapter on the Presbyterian tradition and continues with a study of moral education, concluding with a chapter on the organisation of learning and the subjects of the curriculum.

Haste in proof-reading is probably the cause of a few minor defects, the Scottish Education Department appearing as a singular body and as a plural body on the same page (pp. 77, 78) and pupils following a modified secondary course being described as "modified pupils". But these are minor points in a well-written account which will interest teachers in service and those in training and all concerned with Scottish education.

DAVID A. WALKER, Edinburgh

PLANCHARD, EMILE, *La pédagogie scolaire contemporaine*. Louvain: Nauwelaerts 1968. 3e éd. pp. 468. BF 490.

Les deux précédentes éditions de cet imposant ouvrage ont été publiées en 1947 et 1954. L'auteur, d'origine belge est, depuis 1940 professeur à l'Université de Coimbra (Portugal). On lui doit plusieurs autres ouvrages dont certains sont écrits directement en portugais; d'autres rédigés en français, ont été traduits en portugais, italien, espagnol, grec. Signalons en particulier: *Problèmes de pédagogie universitaire* (Coimbra, Atlantida, 1956) et *La recherche en pédagogie* (Nauwelaerts, 1967). Ces brèves indications montrent l'importance des travaux d'Emile Planchard dans le domaine de l'éducation. Le présent ouvrage constitue un véritable "traité" de pédagogie, tant par l'ampleur et la diversité des thèmes abordés que par la profondeur des vues de l'auteur. – Cependant, même dans sa présentation actuelle l'ouvrage se ressent considérablement de sa première rédaction. C'est ainsi que, parmi plus de 600 auteurs cités dans le texte, – auxquels il faudrait ajouter environ 1.000 noms cités dans la bibliographie, en appendice, – on mentionne le plus souvent: Binet, Claparède, Decroly, L. M. Terman, Wallon; sont évoqués également avec une certaine fréquence, les noms de: H. Bouchet, R. Buyse, M. Debesse, R. Dottrens, A. Ferrière, A. Gesell, R. Hubert, G. Kerschensteiner, M. Montessori, J. Piaget, Th. Simon, W. Stern, E. Thorndike, J. Château. Ces indications quantitatives, nous donnent pour ainsi dire le "climat" de l'ouvrage. Le fait que l'essentiel de ce livre est inspiré essentiellement par les travaux et les doctrines qui ont vu le jour avant 1939, n'apparaît nullement à nos yeux comme un défaut, bien au contraire: il nous semble que l'on a oublié les leçons solidement cimentées des grands pionniers de la pédagogie actuelle, et surtout on a négligé certaines mises en garde par exemple contre un "scientisme délirant", qui a tendance à s'imposer aux "sciences de l'éducation" des années "60". Que l'on nous entende bien, la *méthode* scientifique au service de la recherche est aujourd'hui le seul appui, indispensable sur lequel nous pouvons compter pour améliorer les systèmes éducatifs. Mais la recherche est poursuivie actuellement dans un climat extrêmement confus, désordonné. Une masse considérable d'études présente à titre de conclusion, – des tableaux, des graphiques, des coéfficients de corrélation ou de validité, – bref un ensemble de données chiffrées, qui n'ont qu'une relation plutôt vague avec les problèmes posés. On a peur de formuler des hypothèses, de suggérer quelque vue d'ensemble; et pourtant ce sont des vues d'ensemble, des hypothèses parfois audacieuses, qui ont été à l'origine des grandes innovations dans les sciences de l'éducation. C'est ce rappel important et indirect que nous pouvons saluer dans l'ouvrage d'Emile Planchard.

Le livre est divisé en trois parties: Contenu général de la pédagogie (6 chapitres); Bilan actuel de la pédagogie scientifique (11 chapitres); La pratique scolaire actuelle (6 chapitres). Il est complété par 45 pages d'une bibliographie classée (mise à jour d'une façon quelque peu inégale) et par des informations pratiques. La table analytique des matières est très détaillée (13 pages), ce qui compense quelque peu l'absence d'une table alphabétique des matières; celle des noms, quoique très fournie, paraît comporter des lacunes. L'ouvrage est écrit dans un esprit chrétien; cependant la philosophie de l'éducation n'y occupe que 6 pages, dont deux consacrées aux Conciles et encycliques. L'éducation comparée n'est pas mentionnée. Mais ces lacunes sont, à notre sens, peu de chose, en face de l'immense et très précieuse documentation fournie par l'auteur; documentation d'autant plus utile qu'elle est en grande partie oubliée, alors que, pour l'essentiel, elle garde toujours sa valeur. Quel est l'ouvrage qui ne comporte pas de lacunes? Certes, les "spécialistes", trouveront que telles ou telles lacunes sont "impardonnables".

De la richesse de cet ouvrage, nous ne pouvons donner qu'une idée approximative. E. Planchard examine avec soin les rapports entre les sciences de l'éducation et les autres sciences humaines: psychologie, sociologie, anthropologie, médico-pédagogie, morale, histoire et les différentes techniques pédagogiques, sans omettre les statistiques. Il décrit avec minutie les débuts et l'évolution de la pédagogie "scientifique", du moins au cours des quatre premières décades de ce siècle. Il aborde de nombreux problèmes concrets tels que: la didactique, l'élaboration des programmes, les questions de discipline (et de liberté); il revient à plusieurs reprises, dans différentes perspectives sur les questions de contrôle (examens), d'orientation (scolaire, professionnelle), et les différentes méthodes utilisées dans divers pays. Dans un esprit résolument prospectif, il montre le caractère artificiel de certaines comparaisons, en particulier entre l'école – d'aujourd'hui, d'hier, de demain. Il examine longuement la méthode des tests et leurs différentes applications: contrôle, diagnostic, pronostic et il donne aussi de brèves indications sur les tests de personnalité. Il est bon de rappeler aux psychométriciens modernes que leurs illustres prédécesseurs croyaient pouvoir évaluer l'intelligence au moyen de neuf épreuves du genre suivant: force musculaire, rapidité des mouvements, seuil tactile absolu etc. (p. 241). Dans la dernière partie, E. Planchard décrit une grande variété de méthodes pédagogiques qui se rattachent au mouvement de l'"éducation nouvelle", tant en Europe qu'aux Etats-Unis. Il insiste sur les différents procédés tendant à promouvoir l'individualisation de l'enseignement et d'autre part, sur les rapports entre l'école et la vie sociale. Un chapitre important est consacré à la psychopédagogie des inadaptés scolaires et un autre à la psychopédagogie des éducateurs.

Si l'auteur omet dans le texte les problèmes les plus actuels, tels que celui de la planification de l'enseignement, l'emploi des moyens audio-visuels, dans la bibliographie il signale de nombreux ouvrages récents relatifs à ces questions. A notre sens, il est heureux que cette nouvelle édition de l'important ouvrage de Planchard soit mise à notre disposition, car les jeunes éducateurs ont un peu trop tendance à croire que la pédagogie "scientifique" est limitée aux travaux de B. F. Skinner (qui n'est pas mentionné par E. Planchard); ce serait vraiment une grave lacune dans leur formation.

ALEXANDRE VEXLIARD, Ankara

Rudman, Herbert C., *The School and State in the USSR*. New York: Macmillan 1967. pp. 286. $. 6.95.

Although Soviet education has been intensively studied and written about since the mid-1950's, few books have examined the intricate process of decision-making in the Communist Party apparatus and the implementation of educational policy from the top to the bottom of the Soviet hierarchy. This book is among the first major works to examine the complex interrelationship among the Communist Party, the State, and the Soviet schools. The author presents this process in considerable detail. In essence the decision-making pattern is about as follows. Policy decisions are made by the central organs of the party, are then passed on to the Supreme Soviet which makes them into law, then go to the Council of Ministers who pass the directives down the line to the all-Union Ministries, who in turn instruct the 35 regional Ministries of Education (15 Union Republic Ministries of Education and 20 Autonomous Republic Ministries of Education). The regional Ministries of Education then direct policy down to the district level and finally through the school directors to the individual teachers whose opportunity for personal discretion is small. But new educational policy is seldom decided upon without first being debated in trial balloons in the press, giving some idea of the state of public opinion. New policy is first tried out by the largest regional Ministry of Education, the R.S.F.S.R., in conjunction with the Russian Academy of Pedagogical Sciences, and this region acts as a pacesetter for the other regions.

The primary party units are kept fully informed and their members act as guides, counselors, evaluators, critics, and unofficial inspectors of schools and policy implementation. The book is divided into two major parts. Part I deals with the role of state agencies in the administration of the educational process and includes chapters on (1) The Relationship of Party to State Council, (2) Gosplan – The State Planning Commission, (3) The Economics of Public Education in the USSR, (4) Ministries and Committees of Higher and Specialized Secondary Education, (5) Institutions of Higher Learning, (6) Ministries of Education in Union and Autonomous Republics, (7) Regional, City, and District Departments of Education, and (8) Primary, Elementary, and Secondary Schools. Part II analyzes the roles of the trade unions and the Academy of Pedagogical Sciences in the administration and control of education and includes chapters on (9) The R.S.F.S.R. Academy of Pedagogical Sciences, and (10) The Trade Union of Educational and Scientific Workers. There are 16 tables, 30 lists of figures, five appendices, and an index. References are used and the study is based on three field trips to the Soviet Union made by author Herbert C. Rudman, who is a professor of Administration and Higher Education at Michigan State University. On his last trip in 1963–1964, he headed the United States Research Team studying educational administration in the Soviet Union. This objective study is a valuable contribution to the understanding of administration and policy in a major world power where education is consciously used as an instrument of national advancement.

Franklin Parker, Morgantown, U.S.A.

SINGULE, FRANTIŠEK, "Das Schulwesen in der Tschochoslowakischen Sozialistischen Republik". Band 9 in der *Dokumentation zum in- und ausländischen Schulwesen.* Weinheim: Julius Beltz 1967. 112 S. DM 12.

Es gehört nicht zu den einfachsten Aufgaben, ausländische Leser über das eigene Bildungssystem und seine Schularten und -typen zu informieren, da hinter gleichen oder ähnlichen Bezeichnungen einzelner Erziehungseinrichtungen sehr oft unterschiedliche Inhalte stehen. Manchmal kann man in ausländischen Bildungssystemen den eigenen analoge Institutionen überhaupt nicht antreffen, vielmehr findet man ganz andere und eigenartige Lösungen der Erziehungs- und Bildungsprobleme der verschiedenen Altersgruppen der Jugend bzw. der Erwachsenen. Die analoge Entwicklung der Schulsysteme in Deutschland und im Staatsgebiet der heutigen Tschechoslowakischen Sozialistischen Republik im 19. und Anfang des 20. Jahrhunderts hat jedoch dem Autor die Arbeit erleichtert und vereinfacht vor allem für die deutschen Leser die Lektüre dieses Buches. Selbst wenn die Entwicklung des allgemeinbildenden und besonders des berufsbildenden Schul- und Bildungswesens nach dem zweiten Weltkrieg infolge der neuen gesellschaftlichen Verhältnisse in der ČSSR in ganz anderer Weise verlaufen ist, sind die Hauptschularten des tschechoslowakischen Schulsystems mit den wichtigsten Schularten in der Bundesrepublik in Form und Inhalt vergleichbar geblieben.

Die Gliederung des Buches ist klar und zweckmäßig. Zu Beginn macht der Autor wichtige statistische Angaben über die Bevölkerung, ihre nationale und gesellschaftliche Struktur sowie über ihr Bildungsniveau und charakterisiert dann kurz und treffend die Entwicklung des tschechoslowakischen Schul- und Bildungswesens, seine Erziehungsziele und die gesetzlichen Bestimmungen, auf denen das heutige System beruht. Der Schwerpunkt des Buches liegt in der Schilderung der Organisationsstruktur des Bildungswesens und der einzenen Schularten und -typen sowie anderer Erziehungseinrichtungen von der Kinderkrippe bis zur Hochschule. Der Autor behandelt nicht nur alle Erziehungsinstitutionen für Kinder und Jugendliche, sondern beschreibt auch in angemessenem Umfang die Bildungseinrichtungen für die Ausbildung und Weiterbildung der erwachsenen Werktätigen und der Lehrer. Im letzten Teil des Buches charakterisiert er die Beziehungen zwischen Schule und Öffentlichkeit, behandelt die Schulaufsicht, die Schulverwaltung und die Finanzierung des Bildungswesens, die Studenten- und Schülerfürsorge u.a. Bei der Behandlung einzelner Schultypen führt der Autor auch die Stundenpläne an, kennzeichnet die akuten Probleme, denen sich bestimmte Schultypen gegenüber sehen und geht teilweise auch auf die Entwürfe und Pläne für deren Lösung ein. Die Darstellung der Organisation des Bildungswesens wird durch statistische Übersichten veranschaulicht.

Dem Autor ist es gelungen, in knapper Form einen umfassenden Überblick über das Tschechoslowakische Schulwesen zu geben. Angesichts der raschen Entwicklung des gesellschaftlichen und wirtschaftlichen Lebens in der Tschechoslowakei sind jedoch einige Informationen von der heutigen Wirklichkeit bereits überholt worden. Z.B. mußte auf Grund der Einführung der Fünftagewoche in den Schulen die Gesamtzahl der Wochenstunden in den Stundenplänen herabgesetzt werden. Diese Entwicklung hat darüberhinaus in der Reduktion von Unterrichtsstunden einzelner Fächer ihren Ausdruck gefunden. Auch die Pflichtstundenzahl der Lehrer wurde im Vergleich zum Stand des Schuljahrs 1965/66 herabgesetzt. Die wachsende Zahl mittlerer technischer Kräfte in der Volkswirtschaft hat in zunehmendem Maße zur Auflösung von technischen Betriebsschulen und Betriebsinstituten geführt. Die Schulzeitdauer der allgemeinbildenden Mittelschulen wird beginnend mit dem Schuljahr 1968/69 von drei auf vier Jahre verlängert. Diese Veränderungen beeinflussen aber nicht die in dem vorliegenden Buch geschilderten Prinzipien und die Grundstruktur des tschechoslowakischen Bildungssystems.

Die Darstellung konzentriert sich vor allem auf die Probleme des allgemeinbildenden Primar- und Sekundarschulwesens. Weniger Aufmerksamkeit wurde dem Hochschulwesen und spezifischen Problemen des berufsbildenden Schulwesens gewidmet. So wurde z.B. auch nicht das Lehrlingsgesetz vom Jahre 1958 zitiert, das die Ausbildung der Jugend für die Arbeiterberufe in allen Zweigen der Volkswirtschaft einheitlich regelt.

Der verständliche Stil, die übersichtliche Gliederung und der umfassende Inhalt des Buches vermitteln allen Interessierten, Studenten, Lehrern und Angehörigen der Schulverwaltung einen grundlegenden Überblick und reiche Informationen über den gegenwärtigen Entwicklungsstand des tschechoslowakischen Schul- und Bildungswesens. JOSEF HAVLÍČEK, Prag

SLOOS, ISAÄC, KUIPER, G., VAN HULST, J. W. ,VAN WOLFEREN, M. D., *Correspondence Education in the Netherlands*. Leiden: Leidsche Onderwijsinstellingen 1967. 120 S. $ 4.

Seit kurzem wird die in englischer Sprache noch immer verhältnismäßig spärliche Literatur über den Fernunterricht durch eine Publikation der Leidsche Onderwijsinstellingen, einer der führenden niederländischen Fernschulen, ergänzt. Als erstes fällt die ungewöhlniche, aber ansprechende graphische Gestaltung der vermutlich recht aufwendigen Veröffentlichung ins Auge. Zweifellos handelt es sich um das am besten aufgemachte Buch in der gesamten Fernunterrichtsliteratur.

Nach einer kurzen Einleitung von I. A. Diepenhorst berichtet Isaäc Sloos über die gegenwärtige Situation des niederländischen Fernschulwesens. Sloos, einer der Pioniere des privaten Fernunterrichts und gegenwärtig Generaldirektor seiner Fernschule in Leyden, die vor einigen Jahren in eine Stiftung umgewandelt wurde, betont dabei mit Sachkenntnis und Engagement die Besonderheiten, die für den niederländischen Fernunterricht charakteristisch sind. Die ungewöhnlich große Zahl der staatlichen und halbstaatlichen Prüfungsgremien führte in diesem Lande dazu, daß jeder Fernlehrgang mit einer öffentlich anerkannten Prüfung abschließen kann. Darauf mag es zurückzuführen sein, daß man hier früher als anderswo die didaktischen Qualitäten des Fernunterrichts erkannte. Immerhin bot der Fernunterricht schon vor 70 Jahren den holländischen Lehrern eine Möglichkeit, sich neben ihrer Lehrtätigkeit für weitere Prüfungen zu qualifizieren. – In zunehmendem Maße wird Fernunterricht durch mündlichen Unterricht ergänzt, der in einem kleinen Lande wie Holland infolge der kürzeren Reisewege leichter als in der Bundesrepublik organisiert werden kann. – Für die weitere Entwicklung des Fernunterrichts mag es ferner bedeutsam sein, daß einige Abendschulen bereits versuchen, Fernunterrichtslehrbriefe zu verwenden, um die Zahl der für die Prüfungen vorgeschriebenen Unterrichtsstunden zu reduzieren oder auch den Lehrermangel auszugleichen. – Der Bericht enthält außerdem eine Polemik gegen nicht akkreditierte Fernschulen sowie die Forderung nach staatlicher Aufsicht für die Fernschulen. Zum Schluß werden die 44 in den Niederlanden akkreditierten Fernschulen und die von ihnen vermittelten Lehrinhalte genannt.

In mehreren Ländern, in denen man seit einiger Zeit Vorschläge für eine öffentliche Kontrolle der Fernschulen diskutiert, wird der Beitrag von M. D. van Wolferen mit großem Interesse gelesen werden. Van Wolferen ist Direktor für berufliche Ausbildung im niederländischen Unterrichtsministerium und hat in dieser Eigenschaft sowohl an der halboffiziellen Aufsicht der Fernschulen durch eine Akkreditierungskommission als auch an den vorbereitenden Arbeiten für eine staatliche Aufsicht der Fernschulen mitgewirkt. Sein Kapitel "Supervision of Education by Correspondence" ist die Dokumentation einer zwanzigjährigen Erfahrung in diesem Bereich. Sie enthält u.a. Protokolle parlamentarischer Anfragen in Sachen Fernunterricht und eine detaillierte Beschreibung der Arbeit einer staatlichen Kommission, die 1962 eingesetzt wurde, um die geeignetste Form der Aufsicht über Fernschulen zu ermitteln. Im Anhang werden schließlich die Kriterien angegeben, nach denen seit 1965 geprüft wird, ob Fernschulen akkreditiert werden können.

Der Beitrag des Soziologen G. Kuiper löst leider wenig von dem ein, was seine Überschrift "The Socio-Cultural Meaning of Correspondence Education" verspricht. Das ist umso bedauerlicher, als eine soziologisch fundierte Interpretation der Rolle, die der Fernunterricht im Bildungswesen eines modernen Industriestaates spielt, immer noch fehlt, und zwar sowohl in östlichen als auch westlichen Ländern, von dem Ansatz von Nykerk in Frankreich abgesehen. Kuiper widmet über die Hälfte seines Kapitels der Klärung allgemeiner Begriffe wie Gesellschaft, Kultur, Enkulturation, Sanktion und soziale Mobilität und geht dann auf die Funktionen der Erziehung in der modernen Gesellschaft ein. Erst dann setzt er sich mit dem angegebenen Thema auseinander. Aber auch hier werden im wesentlichen lediglich folgende Punkte berührt: das Fehlen wissenschaftlicher Untersuchungen zum Thema Fernunterricht, die geringe Vertrautheit der Gesellschaft mit dem neuen Lehrverfahren, die das Festhalten an Vorurteilen begünstigt, die negative Einstellung vieler Universitätslehrer, die "fünf Funktionen" des Fernunterrichts (wobei jedoch nur eine *Funktion*, die 2. Chance für Abbrecher, dafür aber vier *Vorteile* des Fernunterrichts genannt werden), die Motive, die Fernschüler veranlassen, diese Unterrichtsform zu wählen oder begonnene Fernlehrgänge abzubrechen, wobei eigene Untersuchungsergebnisse mitgeteilt werden. So interessant einige dieser Ergebnisse auch sein mögen, so ist die sozio-kulturelle Bedeutung des Fernunterrichts keineswegs umrissen worden, auch in den Folgerungen nicht, mit denen die Arbeit abgeschlossen wird. Möglicherweise wäre die Analyse der sozialen Struktur der Fernschüler ein ergiebiger Ansatz für die Behandlung des Themas, weil sich die Bedeutung des Fernunterrichts aus den schichtenspezifischen Motiven und Intentionen ableiten lassen müßte.

Noch enttäuschender ist der Beitrag des Pädagogen J. W. van Hulst. Das liegt hier vor allem daran, daß die Fernunterrichtsexperten in mehreren Ländern seit Jahren betonen, es müsse eine Didaktik des Fernunterrichts entwickelt werden, weil sonst wissenschaftlich begründbare Verbesserungen der Wirksamkeit des Fernunterrichts nicht angestrebt werden können. Die Fachwelt wartet auf eine solche Didaktik, und wenn Hulst seinem Kapitel den Titel "The Didactics of Correspondence Education" gibt, erweckt er Hoffnungen, die im Text keineswegs, nicht einmal im Ansatz, erfüllt werden. Hulst geht von der These aus, daß Fernunterricht, wie jeder Unterricht, auch den Charakter des Schülers bilde, und kündigt dann den Versuch an, die Prinzipien zu erläutern, die dem Fernunterricht zugrunde liegen sollten. Nach einer oberflächlichen Erklärung unterschiedlicher Inhalte des Begriffs Didaktik und der Ermahnung an den Leser, die angelsächsische und deutsch-niederländische Auffassung von Didaktik auseinander zu halten (ohne daß dieser Unterschied in den weiteren Ausführungen des Kapitels noch eine Rolle spielt), geht Hulst bis weit in die Geschichte der Didaktik zurück und zitiert sogar römische und griechische Autoren. Der Leser fragt sich dabei allerdings verwundert, was wohl Informationen wie die folgenden zur Erkenntnis der didaktischen Prinzipien des Fernunterrichts beisteuern können:

"Plato (d. 348 B.C.) laid down an educational programme in a number of laws.The Roman philosopher Seneca (d. 65 A.D.) stated that tuition and education are inseparable, that tuition totally involves the pupil, and that man should be ethically moulded by tuition.

Seneca thought the schools of his time greatly to blame, which led him to say that we apparently do not learn for life but only for school. Seneca also said many valuable things about the disposition of man, to which education should adjust itself as much as possible."

Darauf folgt der Kirchenvater Augustinus. – Der Ertrag des historischen Exkurses: lediglich einige elementare Grundsätze, die für jeden guten Unterricht im allgemeinen gelten, wie z.B. die Anpassung an die Interessenlage des Schülers, die Darbietung der Lehrinhalte in kleinen Schritten mit allmählich wachsender Schwierigkeit, die Darbietung in Form von Dialogen und die Betonung der Schüleraktivität. Alle diese Grundsätze waren bei den Autoren auf den Direktunterricht bezogen, und Prinzipien speziell des Fernunterrichts können von ihnen nicht abgeleitet werden.

Ein zweiter Ansatz, die Betrachtung der "Pädagogischen Situation" im Fernunterricht, bei der Hulst das inzwischen nun wirklich obsolete didaktische Dreieck wieder in Erinnerung bringt, geht ebenso in die Leere wie der Versuch, den Fernunterricht didaktisch dadurch näher zu bestimmen, daß die Gefahr des "unfunctional knowledge" und das Erfordernis der Motivation, der Selbsttätigkeit des Schülers und der Intentionalität größer als beim Direktunterricht sei.

So zeigt sich denn, daß Hulst die Prinzipien, die dem Fernunterricht als einer Unterrichtsform *sui generis* zugrunde liegen, gar nicht erkannt hat. Eine didaktische Analyse hätte den Fernunterricht prinzipiell als eine dem industriellen Zeitalter zugeordnete Form der Wissensvermittlung charakterisieren müssen, die sich vom Direktunterricht strukturell vor allem durch die fortgeschrittene Arbeitsteilung, d.h. durch die Aufteilung der Lehrfunktionen auf mehrere Personen oder Instanzen, die Objektivierbarkeit und Perfektionierbarkeit des Lehrverhaltens, den wichtigen Multiplikationseffekt, die Speicherungskapazität und Disponibilität sowie die Flexibilität in der Anpassung an andere Unterrichtsformen und -medien unterscheidet. Da Hulst diese didaktischen Prinzipien des Fernunterrichts nicht kennt, kann er auch nicht die Vorteile nennen, die den Fernunterricht gegenüber dem Direktunterricht auszeichnen, und die ihn für zukünftige Aufgaben des Unterrichts in der industriellen Massengesellschaft als besonders geeignet erscheinen lassen.

In summa: Ein gut aufgemachtes Buch, das wertvolle Informationen über den Fernunterricht in den Niederlanden enthält und gleichzeitig fast exemplarisch widerspiegelt, wie schwer es Erziehungs- und Sozialwissenschaftlern zur Zeit noch fällt, das bisher arg vernachlässigte Phänomen des Fernunterrichts zu erklären und zu deuten.

Otto Peters, Berlin

THOMAS, R. MURRAY, SANDS, Lester B., and BRUBAKER, Dale L. (eds.), *Strategies for Curriculum Change: Cases from 13 Nations*. Scranton/USA: International Textbook Co. 1968. pp. 386. $ 6.95.

I.

The past two decades have seen a record activity in curriculum change which this book attempts to examine. As stated in the introduction, "At no time before in history have so many people in the world been engaged in so many projects aimed at altering what is taught in the schools and how it is taught." Many factors account for the vast changes now taking place in the kinds of subjects taught and the ways in which they are taught in the world's schools. One factor is the release of many areas from colonial rule and the growth of new nations, each concerned with new development aims, with emphasizing their own history and character, with new socio-economic goals, with the need for universal education, and with broader welfare measures. A second factor is the unprecedented expansion of knowledge, now said to double every fifteen years. A third factor is new insights and experiments in learning theory. A fourth factor is the rapid growth of world population, which has doubled between 1900 and 1965, requiring such new approaches to meet increasing enrollments as team teaching, ability streaming, audio-visual techniques, and other devices. A fifth factor is competition among nations in technological, industrial, and scientific fields. Still another factor is political changes and the connected attempts to reshape people's attitudes and skills.

The thirteen countries discussed, the aspect of curriculum change described, and the contributing authors are in Part I: "Greece: Modernizing Secondary Education," by Andreas M. Kazamias of the University of Wisconsin, and "Israel: Religion, School, and State," by William W. Brickman of the University of Pennsylvania; in Part II: "Japan: Under American Occupation," by Victor N. Kobayashi of the University of Hawaii, "USA: Post-Sputnik Science Curricula," by Willard J. Jacobson of Teachers College, Columbia University, "USSR: Recent Major Curriculum Changes," by Seymour M. Rosen of the U.S. Office of Education; in Part III: "England: Sources and Strategies of Change," by W. D. Halls of Oxford University, "India: Government Strategies for Secondary Education Reform, 1952–1965," by Matthew Zachariah of the University of Calgary, "Nigeria: New Departures in Secondary Schools," by Erma Muckenhirn of Eastern Michigan University, and "Zambia: Education and National Development," by Franklin Parker of West Virginia University; and in Part IV: "Philippines: Language Education and Science Education," by Rolando A. Santos of the University of the Philippines, "Indonesia: The English-Language Curriculum," by R. Murray Thomas of the University of California at Santa Barbara, "Thailand: Redirecting Secondary Education,"by Stanley P. Wronski of Michigan State University, and "Peru: Curriculum Change Since 1956," by Lester B. Sands of the University of California at Santa Barbara.

The contributors are authorities on the countries discussed, each having done previous research and writing on his particular country. The entire work is based largely on original sources. The perceptive initial chapter analyzes strategies of curriculum change around the world. Adding to the long-range usefulness of the work as a textbook or reference volume is a concluding annotated "Selected Readings

on Curriculum Change," by Dale L. Brubaker, divided into geographic areas. The entire work grew out of a comparative education conference on "Strategies for Curriculum Change," held April 7 and 8, 1967, at the University of California at Santa Barbara, where editor R. Murray Thomas is Dean of the College of Education, and where co-editors Lester B. Sands and Dale L. Brubaker are professors in that college. Several maps, school ladder charts, appropriate statistical tables, and an index further add to the value of this book, which is probably the most comprehensive survey of important curriculum changes in thirteen selected countries to appear so far. The book is highly recommended.

FRANKLIN PARKER, Morgantown, USA

II.

Diese Rezension möchte anders als die voraufgehende einiges aus der Sicht eines deutschen Lesers und für deutsche Verhältnisse anmerken. Aus Raumgründen war es notwendig, unter den Beiträgen des Buches auszuwählen.

Der anglo-amerikanische Curriculum-Begriff ist vorläufig noch ohne Entsprechung in der deutschen Begrifflichkeit, denn er bezeichnet einen engen Zusammenhang von *"learning goals, experiences, teaching materials and evaluation techniques"* (Thomas S. 6), den unsere Auffassungskategorien nicht in dieser Deutlichkeit vor Augen bringen. Dadurch hilft der Curriculum-Begriff, die einzelnen Phänomene und ihre Interdependenzen in jenen Zusammenhängen zu begreifen, innerhalb derer sie nur mit Erfolg verändert werden können. Die deutsche Erziehungswissenschaft mit ihrer mehr isolierenden, aber darum nicht unbedingt analytisch schärferen Begriffsbildung, sollte daher aus pragmatischen Erwägungen den Curriculum-Begriff und das ihn bezeichnende Wort in Theorie und Wortschatz übernehmen. Und, was die bezeichneten Sachverhalte angeht: auch in Deutschland müßten z.B. Veränderungen des Lehrplans immer im Zusammenhang mit jenen korrespondierenden Änderungen erfolgen, wie sie ein umfassender Curriculum-Begriff mitzudenken nahelegt.

Thomas versucht eingangs ein Analyseschema für Veränderungsstrategien im Curriculum-Bereich zu entwickeln: *"Strategies are the methods or manoeuvres used to accomplish a curriculum change within a given social system."* Der schlichte Wille zur Veränderung eines Curriculums und auch die klare Zielvorstellung seiner künftigen Gestalt genügen allein nicht mehr, um das Curriculum in die soziale Realität unserer Gesellschaft zu überführen. Thomas entwickelt Ansätze zu einer Veränderungsstrategie, indem er u.a. folgende Faktoren analysiert und bewertet: die Eigenschaften und Interaktionsformen in dieser Hinsicht bedeutungsvoller einzelner und relevanter Gruppen, die Organisationsstrukturen des sozialen Systems und andere Umweltbedingungen im weitesten Sinne.

Im Vergleich mit der deutschen Lehrplangeschichte liest man den Beitrag von Kazamias (*"Greece: Modernizing Secondary Education"*) mit dem Gefühl, Beschränkungen einer verwandten Tradition, die sich selbst bestätigend im Besitz der Wahrheit weiß, eher und leichter entronnen zu sein. Während der türkischen Fremdherrschaft war das hellenisch-christliche Ideal ein Element der nationalen und religiösen Selbstbehauptung geworden. Nach der Befreiung entwickelte sich daraus unter einem Neuhumanismus bayerischer Provenienz eine im Vergleich zu unserer Lehrplangeschichte dominierende Erziehungstradition: denn die hellenistische Geschichte war nationale Vergangenheit, und eine religiöse Vielfalt gab es nicht.

Dies führte zu dem bekannten Syndrom einer weitgehend agrarisch bestimmten Wirtschaft und eines literarisch-historisch ausgerichteten Lehrplans mit Nachdruck auf Formalien der Spracherziehung und gedächtnismäßiger Bewältigung des Stoffes. Puristische Sprachkonzepte und antiquierte Normen der einflußreichen Athener Philosophischen Fakultät waren weitere retardierende Faktoren. Erst im vergangenen Jahrzehnt begann die Regierung mit tiefgreifenden Reformen, stärker das Curriculum auf die Lernbedürfnisse und Lernerfordernisse einer modernen Gesellschaft auszurichten.

Jacobsen stellt in "*USA: Post-Sputnik-Science Curricula*" dar, wie der wissenschaftlich-technische Großerfolg des Sputnik-Starts bei der konkurrierenden Großmacht USA zu einer entscheidenden Wendung in der Lehrplangeschichte führte. Auffällig ist die Vielfalt der Gruppen und Institutionen, die oft spontan die Entwicklungsarbeiten aufnahmen und ferner die für deutsche Verhältnisse ungewohnte Bereitschaft hervorragender Wissenschaftler, sich an Curriculum-Projekten zu beteiligen. Deutsche Curriculum *teams* sollten sich für ihre Entwicklungsarbeiten die Einsichten über die effektive Koppelung von Phasen der Konzeption, Produktion, Erprobung und Revision zunutze machen.

Halls stellt in seinem umfassenden Beitrag "*England: Sources and Strategies of Change*" u.a. eine typisch englische Form der Curriculum-Änderung vor. Komitees fassen die Vielfalt der maßgebenden Gruppen und Instanzen zusammen, und gemeinsam werden auf dem Wege des Kompromisses die Entscheidungen erarbeitet. In manchen amerikanischen Entwicklungszentren herrschen die Fachwissenschaftler vor. Demgegenüber empfiehlt sich das pragmatischere Verfahren der Engländer, weil es in größerem Ausmaß die Beteiligung der Lehrer ermöglicht. Offenbar vollziehen sich Curriculum-Änderungen nur dort erfolgreich, wo es gleichzeitig gelingt, bei den betroffenen Lehrern Lernprozesse für ihre veränderten Aufgaben anzuregen.

HANS TÜTKEN, Göttingen

TRENAMAN, J. M. (ed. by HUTCHINSON, E. M.), *Communication and Comprehension*. London: Longmans 1967. pp. 212. 35/–.

J. M. Trenaman fit des recherches sur les moyens de diffusion en particulier radio et télévision. Par ces deux moyens, il essaya de voir, à partir d'une population d'adultes quels étaient les facteurs d'une communication efficace. Il fit pour cela une série d'expériences détaillées mettant en oeuvre des tests lors des années 1956–1958 dont les résultats furent finalement rassemblés dans le livre *Communication and Comprehension* édité par E. M. Hutchinson.

Les résultats des expériences sont souvent présentés sous forme d'analyse de variance grâce à laquelle plusieurs facteurs sont étudiés ainsi que leurs interactions.

Trenaman considéra d'une part les caractéristiques du message qui ont une action sur la compréhension d'autre part celles qui facilitent la compréhension.

Le contenu du message ainsi que sa présentation influent sur la compréhension du public.

L'aptitude à comprendre différents points d'un programme est fonction de la connaissance préalable du sujet et de la qualité d'abstraction qu'il exige.

La B.B.C. signale dans un rapport que selon le niveau d'instruction de la population les préférences vont à différentes formes de présentation: La longueur d'un

programme est moins nuisible à la télévision qu'à la radio car l'image retient l'attention et accroche l'intérêt du téléspectateur même si le message oral lui échappe.

Dans le message 5 facteurs contribuent à faciliter la compréhension dont 3 sont spécialement importants: Le caractère concret du sujet domine à tous les niveaux. Aux niveaux intellectuels les plus bas, personnification dans le thème et formes dramatiques de présentation deviennent spécialement importants.

Combinant les facteurs: niveau d'occupation, degré d'instruction et d'intelligence J. M. Trenaman concluait: "Les idées abstraites sont difficiles à tous les niveaux bien que ceux qui ont un niveau d'instruction élevé soient mieux équipés mentalement à les comprendre et y sont aussi mieux habitués."

Des idées abstraites peuvent être cependant communiquées à des niveaux étendus de la population à travers un thème personnifié et quelques éléments de dramatisation. En effet, pour communiquer un sujet abstrait à un large auditoire, il est essentiel de trouver une manière de présenter les arguments à travers les aspects les plus courants de la vie et si possible les communiquer sous forme d'histoire ou de jeu.

Dans l'ensemble, à quelques exceptions près, il y a une tendance générale à ce que les programmes télévisés soient reçus avec plus d'intérêt que les programmes radio. Les sujets scientifiques tendent à être jugés comme les plus intéressants.

L'intérêt pour le contenu d'un programme peut se manifester en dépit de doutes sur sa véracité. D'une manière générale il y a une forte tendance à penser que ce qu'on peut voir est plus convaincant que ce qui est seulement entendu ou lu.

En 1930 Wapler et Tyler trouvèrent que beaucoup d'hommes et de femmes étaient intéressés par les lectures dans lesquelles ils pouvaient s'identifier.

En 1953 M. D. Vernon soulignait que l'effet des gravures dans un livre est minime dans l'aide apportée à la compréhension. Même si l'intérêt est accru pour certaines parties des articles, il ne conduit pas à une plus grande compréhension.

En 1956 M. D. Vernon suggérait que le facteur le plus important de compréhension est la cohérence et la continuité logique de ce qu'on lit.

Une dernière conclusion de Trenaman est que lorsque la télévision utilise au maximum ses capacités visuelles, elle doit encore compter sur le langage pour communiquer la signification de ce qui est projeté.

M. A. BOISARD, Saint-Cloud

VEXLIARD, ALEXANDRE, *La pédagogie comparée. Méthodes et problèmes.* Paris: Presses Universitaires 1967. pp. 213. FF 18.

Alexandre Vexliard has first distinguished himself in the field of sociology for his studies of the hobo. His *Introduction à la sociologie du vagabondage* and *Le clochard, étude de psychologie sociale* are important books in the field and have provided their author with the shrewd and tender insights into human nature that come in good stead in the study of education. Vexliard's interests have developed precisely in this direction and his passage from France to Turkey as Professor of Education at the University of Ankara has extended this interest into the field of comparative education.

La pédagogie comparée is the first large scale fruit of this interest and establishes the author as one of the exponents of the field in France. The past decade has witnessed a revival of interest in educational comparisons by men such as Raymond Poignant (*L'enseignement dans les pays du marché commun,* SEVPEN 1966,) and

Maurice Debesse ("Qu'est-ce que l'éducation comparée?" *Bulletin de la Société française de Pédagogie*, no. 125, 1958, pp. 43–46).

There were some setbacks threatening this revival when the journal *Repères*, which was begun bravely in 1964, discontinued publication two years later and when the passing of Roger Gal weakened the interest which the Institut Pédagogique National has had in the field. Vexliard's book has rendered good service in stemming the tide of these reversals and bolstering up the long overdue French renaissance.

The work has been done with the gift for synthesis for which French intellectual life is remarkable. In the first part of the book Vexliard methodically explores the status of the field. His early chapters are on the history, theory, and methods of comparative education and leave little to be desired. Included here and there are names of people who would be considered minor in their own countries, but even that gives the treatment additional freshness not usually present in more routine references to contemporary "greats". Vexliard reviews "the state of the field" with lucidity; the thoroughness of his acquaintance with the literature in English is, for a Frenchman, out of the ordinary. Of particular interest are Vexliard's view on what discipline should be the basic tool of research in comparative education and his justification for the choice of the term "comparative pedagogy" instead of "comparative education."

In the second portion of the book the author devotes himself to the problem approach. His list of items for research in the field of comparative education is orderly and impressive. Of particular importance is his identification of purely pedagogical problems that await study. Too often, the schools and their everyday concerns are forgotten by researchers anxious at present to examine the broader social issues. Vexliard illustrates his notions of the problem approach by taking up at length the topic of democratization of schooling. His classifications are sound though the treatment is somewhat marred by a subtle advocacy of egalitarianism directed specifically and perhaps properly at French schools but too exhortatory in nature for a general textbook. Vexliard discusses also somewhat at lesser length the problem of educational planning. He makes a useful distinction between such work in industrial and non-industrial countries. The former are seldom given their proper due even in exhaustive volumes on this fashionable subject. Both problems as well as the useful appendix which describes educational systems by countries are marred by total exclusion of Japan which is the most important country in the world today both as regards democratization and planning. Vexliard has previously written on the relationship of psychology and education, ("L'éducation comparée et la notion de caractère national" *Revue de psychologie des peuples*, 2, 1965, pp. 179–203.), and it is a pity that he has not worked on this subject at a much greater length in his book. It is the pushing forward of such frontiers of comparative education that is most urgently needed at present.

By comparison with books available in English, Vexliard's book might be considered to be too expository and synoptic in nature. But in view of the lack of such books for the French reading audience he has made an extremely useful contribution by providing the first basic text in comparative education written by a Frenchman. Together with the French translation of Franz Hilker's German volume, (*La pédagogie comparée*, SEVPEN, 1964) and earlier French works by Pedro Roselló out of Switzerland, this is the sum total of what is available at present by way of general introduction to the field in the country which originated the idea of comparative education.

GEORGE Z. F. BEREDAY, New York

INSTITUTE NOTES

The Director-General of UNESCO Paris has appointed Dr. Tetsuya Kobayashi as Director of the Unesco Institute for Education. Dr. Kobayashi is Chairman of the Education Division and Assistant Dean of the Liberal Arts College of the International Christian University in Tokyo. He officially took up his functions in Hamburg on 24 July 1968. He took over from M. Albert Legrand, Agrégé de l'Université, and member of the Secretariat of UNESCO Paris who served as Acting Director for the period from 2 October 1967 to 23 July 1968. M. Legrand returned to UNESCO Head Quarters Paris.

From 18 to 21 June 1968 an expert meeting on the "Situation of Education in the Federal Republic of Germany" was held at the Institute. It was organized within the framework of the Institute's regional activities. The aim of the meeting was to define central problems and main trends in the development of current attempts at reform in the context of the present situation of education in the Federal Republic, to analyse difficulties which confront these attempts and suggest ways of overcoming them. The problems concerning schools were prominent in these discussions. Among the 30 participants, who were mainly from the Federal Republic of Germany, there were teachers, educationists, representatives of the Ministries of Education and Culture of the various *Bundesländer* and educational research institutes, and experts from England, Sweden and Czechoslovakia. Working groups were concerned mainly with the following topics: education policy, structure of the educational system, norms in education. A report on the results of the meeting will be published in 1969.

Under the auspices of the Unesco Institute for Education, and in association with the Swedish and British Social Research Councils and the Committee on Learning and the Educational Process of the Social Science Research Council of the United States, a Seminar on Learning and the Educational Process (SOLEP) was held near Stockholm, Sweden from 29 July to 23 August 1968. The Seminar was supported by funds from UNESCO, Paris, the Swedish Social Science Research Council, and the Ford Foundation, and was directed by John B. Carroll of the Educational Testing Service, Princeton, N. J. The expenses of some individual participants were borne by their own institutions, the *Stiftung Volkswagenwerk*, and the *Stichting voor Onderzoek van het Onderwijs* in the Netherlands.

The purpose of the Seminar was to provide advanced training for experienced research workers interested in problems concerning education. It examined developments in psychology and other behavioural sciences that have potential significance for education, and also educational developments and needs that pose questions for the behavioural scientist. The activities of the Seminar assisted participants to select problems for their own research and to plan an attack on them with the aid of expert consultants. Both methodological and substantive problems of research were considered. The instructors were: Mats Björkman, Professor of Psychology, University of Umeå, Sweden; Alan M. Brimer, Head of Research Unit, Institute of Education, University of Bristol, England; Evan R. Keislar, Professor of Education, University of California, Los Angeles, USA; Elzo Velema, Director, Center for Educational Research and Counseling and Associate Professor at the Technical University Twente, Enschede, Netherlands; Michael Wertheimer, Professor of Psychology, University of Colorado, Boulder, USA; David E. Wiley, Associate Professor of Education and Human Development, University of Chicago, USA. Participants, who had to have a Ph.D., or a major publication, were invited after having been selected from nearly two hundred applications. In all there were thirty-five participants, who came from Australia, Canada, Czechoslovakia, Denmark, England, Federal Republic of Germany, France, Hungary, Italy, Netherlands, Norway, Poland, Scotland, Sweden, Switzerland, and the United States.

The Seminar began with seminars on cognitive development, educational research, practical operationalism and methods in comparative education. From these four groups, many ad hoc seminar groups were formed, some of which lasted for the whole seminar; typically, participants belonged to two or three seminar groups for the period of the whole seminar, and also looked into one or two other seminar groups. Two or three consultants came in each week giving talks and in some cases seminars on their particular research areas. Computer facilities were available in the *Datacentralen* on an IBM 360/75 in Stockholm. An excellent library of major publications in each of the fields under consideration, as well as all major journals, was made available by the *Pedagogisk Psykologisk Bibliotek* in Stockholm.

Twenty-three experts, specialists in education in Africa, Latin-America, Asia and Europe, met from 9 to 14 September 1968 at the Unesco Institute for Education in Hamburg to examine the problems concerning the structure and functioning of community schools in developing countries.

The aim of this meeting was to produce the outline for a manual for the use of policy makers and educational authorities, teaching staff of teacher-training institutions and all persons working in education.

Four working groups studied respectively the position of the teacher as regards the community, examining particularly his social and political status, the means he should employ in order to obtain the co-operation of the community and institutions other than the school, and the scope and bounds of his sphere of activities, the role of the teacher, taking into account the different conditions he may be working in: one-teacher school, school with larger teaching staff; priority activities which should be his responsibility and secondary activities with which other workers could be entrusted, the curriculum in its broadest sense, consequently not only taking in the set of subjects taught at school, but also out-of-school activities organised for the benefit of the community, and finally teacher training. In this last group particular attention was paid to ways of encouraging the teacher to adopt a favourable attitude towards integration and the participation of the community in collective development. In this case a special study was centred on the problems concerning refresher courses and in-service training. Besides various considerations of a theoretical nature the manual, which will be published by the Unesco Institute for Education in Hamburg in co-operation with UNESCO Paris, will put forward a set of practical ideas as to the setting-up and running of community schools and concerning the various problems which were brought up in the working groups. This manual will be published in 1969.

In July the International Association for the Evaluation of Educational Achievement (IEA) held a meeting of the International Science Committee at the Unesco Institute for Education. This committee reviewed the item analysis and the comments on the pre-testing, which had taken place between March and May 1968. The proposed final versions of the tests were put together and these were sent out to all of the twenty participating countries for comment. It is hoped that the final versions will be produced by the end of November 1968.

In September, IEA held a meeting of the National Technical Officers. The National Technical Officers are the persons in each of the National Research Institutions who are responsible for the day-to-day work of IEA in their country. All of the procedures for the testing programme in 1969 were gone through in detail and all of the sampling proposals for each country, whereby probability samples of defined target populations (a. 10-year-olds, b. 14-year-olds, c. pre-university students) were worked out in detail.

PUBLICATIONS RECEIVED MAY–OCTOBER 1968
MAI–OKTOBER 1968 EINGEGANGENE VERÖFFENTLICHUNGEN
PUBLICATIONS REÇUES ENTRE MAI ET OCTOBRE 1968

except those already reviewed. The mention of a book in this list does not preclude a later review.

mit Ausnahme von solchen, die bereits besprochen worden sind. Die Aufnahme eines Buches in diese Liste schließt eine spätere Besprechung nicht aus.

exception faite de celles qui ont déjà été analysées. L'énumération d'un livre dans cette liste n'exclut pas une analyse ultérieure.

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     articles: 1) C. E. BEEBY: "Stages in the Growth of a Primary Education System," *Comparative Education Review*, 6, 1962, pp. 2–11.;
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FORTHCOMING ISSUE

The next number will not concentrate on a special theme but deal with various aspects of education.

Among the contributions will be:

B. Schiff, Walsrode	Die Grundschulreform in der UdSSR Motive und Probleme
S. Marklund, Stockholm	School Organization, School Location and Student Achievement
K. Erlinghagen, Regensburg	Zur Bildungssituation des deutschen Katholizismus
S. Jayaweera, Ceylon	Recent Trends in Educational Expansion in Ceylon

These titles are as yet only provisional and may be altered before publication.

EDITORIAL

The last two decades have seen an upsurge in many countries of educational surveys of an empirical research kind. In some cases it has been the policy makers who have recognised that it is necessary to have evidence as a basis from which to make decisions resulting in change in an educational system, e.g. Sweden and the United Kingdom where governments have commissioned specific surveys. In other cases it is the educational research workers (many of whom started in the discipline of psychology) who have initiated the surveys and the policy makers are slowly learning the value of the evidence produced. It is the purpose of this Special Number to inform readers about certain aspects of a large international educational survey which has been taking place over the last ten years.

Exactly one decade ago an international pilot project was initiated in cooperation with the Unesco Institute for Education, Hamburg, to discover whether it was administratively possible to carry out an international survey and if the results were meaningful. The results of this pilot project were published in 1962.1)

The aim of this international research is to take advantage of cross-national and/or cross-system differences in terms of the "input" (e.g. types of students coming into the school system), "process" (e.g. methods of teaching, grouping within the school system, etc.) and "output" (school achievement both cognitive and affective) aspects of systems of education in order to identify the important factors both within and without the school associated with educational achievement. It is evident that certain basic problems in education cannot be successfully tackled unless one tries to utilize cross-system variability, such as, for example, the effects of differing ages of entry to school, differing societal attitudes to various aspects of education, differing pre- and in-service teacher training systems, comprehensive and selective school systems, etc.

The informal group of educational research institutes which co-operated in this work called their research work the International Project for the Evaluation of Educational Achievement (IEA) and when the pilot project was completed they began a detailed study of one subject area only – mathematics. There were various reasons for choosing mathematics. First, many countries were concerned with improving their scientific and technical education at the basis of which lies the learning of mathematics. Second, many countries were involved at that time in re-examining the curricula, methods of teaching mathematics and the effects of the introduction of the so-called "New Mathematics." Third, the symbols of mathematics are, in general, international and therefore problems of semantics and language would be reduced. Twelve countries participated in the mathematics study: Australia, Belgium, England, Federal Republic of Germany, Finland, France, Israel, Japan, Netherlands, Scotland, Sweden and the United States of America. This study took five years to complete and the results were published in full in 1967.[2])

In 1967 IEA incorporated itself as an international, non-governmental, nonprofit-making, scientific association, whose principal aims are:

a) to undertake educational research on an international scale;
b) to promote research aimed at examining educational problems common to many countries, in order to provide facts which can help in the ultimate improvement of educational systems;
c) to provide, within the framework of the Association, the means whereby research centers, which are members of the Association, can undertake cooperative projects.

In 1966, however, it had begun on its second phase of work. Many of the results of the mathematics study were of great interest in terms of the associations between certain educational practices (both in the organization of the school and the teaching), social factors and mathematics achievement. It was, of course, necessary to see if these relationships also occurred in other subject areas. From November 1966 until three months ago work was carried out in the construction of international cognitive (and affective) testing instruments in Science, Reading Comprehension, Literature, English as a foreign language, French as a foreign language and Civic Education for 10-year-olds, 14-year-olds and pre-university grade students. The main testing will be completed by 1971 in all subject areas and it is hoped to issue a series of publications on the results in 1972/73. Since the mathematics study research institutes from eight other countries have joined IEA, namely, Chile, Hungary, India, Iran, Italy, New Zealand, Poland and Thailand.

Apart from there being one international survey there exists, of course, the possibility of analysing the data in detail within countries and having twelve national surveys, and one of the aims of this Special Number is to present summaries of some of the national analyses of the mathematics data which have been carried out and published nationally.

This Special Number is divided, somewhat arbitrarily, into three sections. The first section presents summaries of national analyses. In some cases a complete separate national analysis was undertaken, e.g. England. In other cases, a few hypotheses only were tested on a national basis, e.g. Scotland, and in yet other cases, comments have been made about the national system of education (or aspects of it) on the basis of the international results. The second section presents comments from three countries on IEA's work, particularly the mathematics study, in terms of its usefulness to national systems of education. The third section presents a selection of further work undertaken by IEA, which is thought to be of interest to readers and which has not yet been published. The final article in this section, however, is not involved with the substantive work of IEA, but is concerned with the technical administration of carrying out international educational research projects.

Since so much of what appears in this number is concerned with the IEA mathematics study, Neville Postlethwaite, the Executive Director of IEA, presents, in the first article, information on the populations tested, the way in which they were sampled and the construction of the mathematics tests. In educational surveys of this type the sampling design is cardinal to the whole enterprise, as is the "fairness" of the tests for all the populations tested. The scene is set, therefore, for the results which follow.

Douglas Pidgeon, the Technical Director of IEA and the Deputy Director of the National Foundation for Educational Research in England and Wales, shows how the N.F.E.R. took advantage of the IEA international survey to carry out a national survey covering virtually the whole range of secondary schooling in England. Of particular interest were the comparisons between school types which are examined from different angles. Various hypotheses are tested dealing with school organization, curriculum and the prediction of students' occupations.

Paavo Malinen, chief instructor of mathematics and science at the Normal School of Jyväskylä and Vesa Lyytikäinen, inspector of educational experimentation in mathematics teaching at the Central Board of Education of Finland, have not carried out a special national analysis in Finland but have examined the results presented in the international study from the point of view of Finland. Since the Finnish data were incorrectly weighted in the international report, it is natural that the authors deal first with the required re-weighting of the results. The differences in performance between primary and secondary school students (where the two types of schools are running parallel) are discussed. The likely influence of syllabus, national examination and teacher training are also examined.

Shigeru Shimada, a senior researcher of the National Institute for Educational Research in Tokyo concentrates on those parts of the Japanese national analysis which are not included in the international report, namely sampling design, score distributions, item analyses and attitude scales.

Sies Wiegersma, Professor of Vocational and Occupational Psychology at the University of Amsterdam, examines the selection into different types of school by comparing distributions of the mathematics scores in the different schools and shows the differences in mean scores as well as the considerable overlap.

David Walker, the Director of the Scottish Council for Research in Education, presents two features of the Scottish national analysis – the relationship of I.Q. to the mathematics scores and the association of teacher training to students' mathematics performance.

The next three communications deal with the views of three persons from different countries on the value of the IEA mathematics study for the rethinking of various aspects of educational practice and policies in their own countries. P. Hughes, Deputy Director General of Education of the Education Department, Hobart, Tasmania, discusses the study from the point of view of a State Department of Education official. F. Hotyat, the President of the *Institut Supérieur de Pédagogie*, Morlanwelz, and the grand old man of educational research in Belgium, discusses, in his very practical way, the findings he thinks to be of most interest to educators in Belgium. The third communication is from Helga Thomas, staff member of the *Institut für Bildungsforschung in der Max-Planck-Gesellschaft*, Berlin, who carefully selects those data from IEA, which she thinks to be of most interest to the educators in Germany in the present educational debate in that country. At the same time she indicates the types of further measures which should, and can, be introduced into this kind of survey.

Gilbert F. Peaker, C.B.E., whose research is well-known in many countries, has written the next two articles. He was responsible for carrying out most of the analyses in the Early Leaving Report, the Crowther Report, the Newsom Report and the Plowden Report in England. His first article shows how the perusal of item analyses can be of great interest to curriculum designers and teachers of mathematics in the re-examination of what they teach, when, and to what sort of students. His second article is highly technical. One major question which is always asked about international achievement tests (or national tests, too), is whether it is possible to construct tests which are equally "fair" or "unfair" to all the countries with their different educational programs and goals. In this present article, the author examines the possibility of using principal components analysis after the testing has taken place to decide if and how to re-weight sub-scores to produce a total score for each country, if the country is the unit of analysis, so that each country is given fair treatment.

Richard Wolf, Professor of Education at Teachers College, Columbia University, New York, examines the same problem but from a different angle. He compares, by the use of rank order correlations, the relative difficulty and discrimination of items between countries and shows that, although the sort of item which is relatively difficult in one country is also relatively difficult in other countries, there are some interesting exceptions.

Bruce Choppin, of the IEA central staff, examines the question of whether literary appreciation can be measured objectively on the basis of two small studies carried out by IEA involving students' responses to both poetry and prose.

Douglas Pidgeon, in the last article, gives an overview of the major aspects of work to be undertaken in international studies of the IEA kind and shows some of the many problems, both organisational and diplomatic, that are met, and which must be overcome if the research is to be completed successfully.

Finally, a list of IEA's publications to date is given together with some of the reviews which have appeared.

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IEA MATHEMATICS STUDY TARGET POPULATIONS, SAMPLING AND TESTS

by T. NEVILLE POSTLETHWAITE, Hamburg

The aim of this article is to acquaint readers with the populations tested (and the nomenclature given the different populations) in the IEA mathematics study, the sampling procedures used and something about the tests each of the populations were given.

Target Populations

Basically two populations were tested. The first was 13 year old students wherever they might be in the school system. Age thirteen was chosen since this was the last age in all countries participating in the study where 100 per cent of an age group was still in full-time schooling, i.e. the last point before any drop-out occurred. The second was all students in the last grade in full-time secondary schooling, i.e. the pre-university grade. This point was chosen because it represents a major transition point in each education system and also is the termination of formal schooling in each country. It is also a point which can be said to be that where the "fruits" of secondary education may be assessed. Obviously, however, there are important differences between countries in the composition of these groups. For example, the average age of completing pre-university education ranges from 17 years 2 months in Australia to 19 years 10 months in the Federal Republic of Germany.1) Again the age at which students begin school varies from country to country, and thus the total length of schooling varies. Secondly, it can be argued that the second and third year sixth-former in an English state school is not the equivalent of an American 12th grader or even of a Swedish *studentexamen* student. Apart from different lengths of schooling, the selection process which has taken place in each of these systems is very different in terms of grade-repeaters and drop-outs, and the number or the percent of a year group in this pre-university year also differs from country to country. Thirdly, the number of subjects studied in the pre-university year ranges from an average of three in England to nine or more in some European countries. Thus, there are differences in the structure of this transition point from one country to another, and this must be borne in mind in the interpretation of the results. However, it was decided that the advantages of working at the pre-university major terminal point appeared to outweigh the disadvantages of lack of comparability, so this population was chosen.

Each of the above populations – the 13-year-olds (Population 1) and the pre-university grade students (Population 3) was subdivided as follows:

Population 1a:

All students who were aged between 13:0 – 13:11 years at the date of testing. This meant that all types of schools with students of this age should participate and be represented according to their proportions of students from the population defined.

Population 1b:

All students at the grade level where the majority of students of age 13:0 – 13:11 were found.

Population 3a:

Those studying mathematics as an integral part of their course for their future training, or as part of their pre-university studies, e.g. mathematicians, physicists, engineers, biologists, etc. or all those being examined at that level.

Population 3b:

Those studying mathematics as a part (complementary) of their studies and the remainder.

Population 2, which has so far not been mentioned, was used for national purposes only. It was chosen by each National Center and was a major drop-out point somewhere between Populations 1 and 3. Where it is referred to in articles in this number it is also defined.

Sampling

The main problem in sampling was to secure a representative sample of the particular target populations in each country. Each national research center appointed a sampling expert for its country. The IEA, on the other hand, decided that it was necessary to have one person who could devote himself more or less continuously to the task of examining the sampling plans for each target population within each country and who would enter into correspondence with the national sampling expert.

Each target population was divided into a sampled population and an excluded population. It was agreed that where there was a small category of schools that, on the one hand, would be very expensive to sample and, on the other, was so small that the results from it would make little difference to the general picture, it could be reasonably excluded. In all cases, the excluded population was negligible, except in Israel, where students who had recently immigrated from under-privileged areas were excluded.

The procedure used for sampling the "sampled population" was that of stratified random probability sampling. The unique merit of probability sampling is that the standard error of the sample as a whole or any part of it can be determined from the internal evidence of the sample itself. All of the countries used probability sampling, except for the Federal Republic of Germany (represented by only two of the *Länder* Hessen and Schleswig-Holstein) which maintained that if a random process of selection of schools was used, many of them would be unco-operative and that it would be better not to use probability sampling, but to make instead a judgement sample from schools known to be co-operative. This was, of course, for the Germans to decide, but the internal evidence, in this case, supplies no guarantee of representativeness.

In the United States, the sampling was in three stages, the first stage being a sampling of communities, the second a sampling of schools within the selected communities, and the third a sampling of students within the selected schools. Elsewhere the sampling was in two stages, with schools as the first and students as the second stage. Multi-stage sampling is needed, because it is impracticable to sample students directly in a single stage. But a multi-stage sample is bound to be larger, in terms of students, than a simple (i.e. a single stage) sample giving standard errors of the same size.

The standard error of sampling can be reduced by stratifying schools. It could be farther reduced by stratifying students within schools. In this study schools were stratified but the stratification of students was not attempted. In all countries schools were stratified by sex and type, and in some also by (a) geographical or administrative areas, (b) ethnic and religious groups, and (c) rural-urban locality. For the random selection of students within schools the principle of taking in the students whose birthdays fell on certain days, spread uniformly around the year, was used.

Readers who are interested in the detailed technicalities of the sampling procedures used are referred to Chapter 9 of Volume I of the main mathematics study publication,2) where full details of stratification, weighting and calculations of standard errors are given.

Mathematics Tests

A great deal of effort went into the construction of these first international tests in mathematics. Content analyses were carried out in each country for each target population. On the basis of these an international committee of mathematics educators and test constructors prepared an outline of topics and intellectual processes to be covered in the international tests. Items were produced in accordance with the test blue-print and pre-tested. On the basis of what was required for the tests and on the basis of the item analyses from the pre-testing, the items for the final test, were selected and organized into nine one-hour test units – A, B, C, 3, 4 5, 6, 7, 8, 9.

Table I groups the items into topics in any one set of tests.

TABLE I

Summary of Content of Tests for Different Populations

Topic	Popn. 1 $\underbrace{\text{(A,B,C,)}}_{3}$	Popn. 3a (5,7,8,9)	Popn. 3b (3,5,6,)
Basic arithmetic	13		3
Advanced arithmetic	18	3	9
Elementary algebra	12	1	5
Intermediate algebra	4	19	13
Euclidean geometry	13	5	13
Analytic geometry	1	8	5
Sets	4	4	4
Trigonometric and circular functions		3	3
Analysis		8	1
Calculus		9	
Probability		1	1
Logic		8	1
Affine geometry	3		

Estimates of the reliability of the total test scores were obtained by using the Kuder-Richardson Formula 20 procedure of estimating reliability from item statistics and the test standard deviation. Table II presents the reliabilities of the tests for the different target populations.

TABLE II

Reliabilities of the Total Mathematics Score for Populations 1a, 1b, 3a and 3b in Each Country

Country	1a	1b	3a	3b
Australia	.913	.882	.867	—
Belgium	.929	.913	.906	.836
England	.951	.958	.923	.895
Fed. Rep. of Germany	—	.897	.848	.800
Finland	.888	.901	.865	.844
France	.929	.927	.913	—
Israel	—	.917	.817	—
Japan	.941	.941	.925	.926
Netherlands	.948	.915	.794	—
Scotland	.933	.940	.861	.844
Sweden	.869	.869	.897	.732
USA	.909	.906	.915	.844

Some statistical evidence was gathered on the validity of the IEA tests in England by comparing "O" and "A" Level students' performance on the IEA tests with their performance two or three months later in their "O" and "A" Level examinations. The average correlation was 0.65 for "O" Level and slightly higher for "A" Level, which indicates that there is substantial overlapping, but that it is far from complete. However, in the absence of information on the reliability of the G.C.E., it is not possible to state how nearly the IEA tests and the G.C.E. are measuring the same achievements.

NOTES

1) Husén, Torsten (ed.): *International Study of Achievement in Mathematics. A Comparison of Twelve Countries*. Stockholm/New York: Almqvist and Wiksell/John Wiley, 1967, Vol. I, Chapter 14, pp. 272–73.
2) *Op. cit.*, Vol. I, Chapter 9, pp. 147–162.

DIE *IEA*-UNTERSUCHUNG ÜBER MATHEMATIKUNTERRICHT
POPULATIONEN – STICHPROBENBILDUNG – TESTS

von T. Neville Postlethwaite, Hamburg

Um den Lesern die Orientierung zu erleichtern, erläutert der Beitrag, welche Schüler für die *IEA*-Mathematik-Untersuchung getestet, wie die Test-Populationen gebildet und welche Testaufgaben den Schülern gegeben wurden.

Es wurden vier Populationen ausgewählt. Von diesen wurden folgende Stichproben gebildet und von den beteiligten Forschungszentren getestet:
- alle Dreizehnjährigen (Population 1a),
- alle Schüler der Klassen mit den meisten Dreizehnjährigen in den letzten drei Monaten des Schuljahres (Population 1b),
- Schüler der Abschlußklassen der Sekundarschule (vor dem Übergang zur Universität) mit Mathematikunterricht im letzten Schuljahr (Population 3a),
- Schüler der Abschlußklassen der Sekundarschule ohne Mathematikunterricht im letzten Schuljahr (Population 3b).

Es war den Forschungszentren freigestellt, darüber hinaus Schüler wichtiger anderer Zwischenabschlußklassen zu testen.

Unter Zugrundelegung der Schule als Einheit wurden Zufallsstichproben gebildet. In den Vereinigten Staaten wurde eine dreistufige Stichprobenbildung (Gemeinde, Schule und Schüler ausgewählter Schulen), in anderen Ländern eine zweistufige Stichprobenbildung (Schule und Schüler ausgewählter Schulen) durchgeführt. Um die Standardfehler bei der Stichprobenbildung möglichst klein zu halten, wurden die Populationen stratifiziert.

Für die Testkonstruktion wurde das gewöhnliche Verfahren (Inhaltsanalyse, Testspezifizierung, Ausarbeitung der Testaufgaben, Vortest, Item-Analyse und endgültige Testkonstruktion) angewendet. 174 Items wurden schließlich in neun einstündigen Tests zusammengestellt. Tabelle I gibt eine Inhaltsübersicht der verwendeten

Tests, Tabelle II die Zuverlässigkeitskoeffizienten der Tests. In England wurde durch Korrelation mit Ergebnissen der *G.C.E.*-Examen die Gültigkeit der *IEA*-Tests für zwei Populationen erwiesen. Die durchschnittliche Korrelation betrug .65.

L'ETUDE DE L'*IEA* SUR L'ENSEIGNEMENT DE LA MATHEMATIQUE POPULATIONS - ECHANTILLONNAGE - TESTS

par T. NEVILLE POSTLETHWAITE, Hambourg

Pour permettre aux lecteurs de mieux comprendre quels élèves ont été testés dans l'étude de l'*IEA* sur le rendement en mathématique, la façon dont l'échantillonnage pour les populations-types a eu lieu et quels tests ont été donnés aux élèves, cet article fournit les renseignements suivants:

On choisit quatre "populations types" qui ont dû être échantillonnées et testées par chaque centre de recherche qui y participait. Ce furent:

- tous les élèves de treize ans (Population 1a),
- tous les élèves de la classe où la plupart ont treize ans trois mois avant la fin de l'année scolaire (Population 1b),
- les élèves des classes terminales (qui vont entrer à l'université) étudiant la mathématique comme sujet principal (Population 3a),
- les élèves des classes terminales n'étudiant pas la mathématique comme sujet principal (Population 3b).

Les centres de recherches ont pu à titre facultatif tester les principales populations aux niveaux terminaux situés entre les groupes d'âge de 13 ans et pré-universitaire. L'échantillonnage de probabilité fut utilisé avec l'école en tant qu'unité d'échantillonnage. Aux Etats-Unis, on a utilisé l'échantillonnage à trois degrés (communauté, école et élèves dans des écoles sélectionnées), et dans d'autres pays l'échantillonnage à deux degrés (école et élèves dans des écoles sélectionnées). La stratification fut employée de façon à réduire l'erreur courante d'échantillonnage.

On a adopté la procédure normale de l'élaboration des tests (l'analyse des contenus, de la spécification des tests, la préparation des items, le prétest, l'analyse des items et l'élaboration finale des tests). On organisa finalement 174 items en neuf unités d'une heure. Les résultats subsidiaires utilisés sont indiqués dans le Tableau I et la fidélité des tests dans le Tableau II. La preuve de la validité simultanée des *IEA* tests en Angleterre a été réunie pour deux populations. La corrélation moyenne fut .65.

NATIONAL ANALYSIS: ENGLAND*)

by Douglas A. Pidgeon, London

Planning the National Survey

Since involvement in the IEA project meant that fairly large and representative samples of secondary school pupils in England would be tested in mathematics, it was decided to use the occasion for carrying out a more systematic national survey of achievement in that subject. The IEA study required the testing of pupils aged 13 to 14 and also those pupils in their pre-university year; the testing of intermediate samples of pupils was a "national option." In England, therefore, to cover the IEA requirements and the national survey, six target populations were defined.

1a – All pupils aged between 13:0 and 13:11 on 1st July 1964.
1b – All pupils in the 3rd form of secondary schools on 1st July 1964.
2a – Pupils aged between 14:6 and 15:5 inclusive on 1st March 1964, *but not* including any pupils who had taken, or were about to take, G.C.E. "O" Level in any subject during the academic year 1963–64.
2b – All pupils who, not having previously attempted any G.C.E. "O" Level examinations, were about to take at least one subject at G.C.E. "O" Level in the summer of 1964.
3a – All pupils who either were about to take a G.C.E. "A" or "S" Level mathematics paper in the summer of 1964, or had already taken a G.C.E. "A" or "S" Level mathematics paper.
3b – All pupils who either were about to take a G.C.E. "A" or "S" Level paper (*not* including mathematics) in the summer of 1964, or had already taken a G.C.E. "A" or "S" Level paper (not including mathematics) in the summer of 1964.

In terms of the national survey a progression may be traced in the sense that 1a pupils come mostly from the 2nd form, 1b is the 3rd form, 2a pupils come mostly from the 4th form, most of 2b from the 5th form, and most of 3a and 3b from the second and third year 6th.

Several extra questions for national use only were inserted into the Student Questionnaires; these were concerned with differences in time allocated to pure *and* applied mathematics at "A" Level, the types of schools attended by the mothers and fathers of the pupils tested, and the number of children in the family from which the tested pupil came, and

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*) A full account of the survey in England may be found in Pidgeon, Douglas A. (ed.): *Achievement in Mathematics. A National Study in Secondary Schools.* London: N.F.E.R. 1967.

his position in it. In the School Questionnaire a question was asked concerning the practice of setting (as opposed to streaming). In addition to the actual survey, the opportunity was taken of following up many of the pupils to the end of the academic year, and of collecting information on their results in the G.C.E. "O" or "A" Level mathematics examinations if they had taken them, on their occupation if they had left school, or on what they were studying if they were still at school.

The survey in England was administratively complicated, involving over 12,000 pupils and 2,100 mathematics teachers in more than 400 schools. The sampling design was also complex in order to ensure the appropriate representation of pupils attending both single sex and coeducational schools of every type within the maintained and independent sectors. The school types surveyed within the maintained sector included modern, grammar, technical, comprehensive, and "others" – the latter group being a rather "mixed-bag" of schools which could not conveniently be classified amongst the other types. The independent sector included direct grant schools, recognised independent schools and a few "other" independent schools.

How the Data Collected Were Used

The data collected in the survey were used in five separate ways: firstly, the information obtained by means of the questionnaires to pupils, teachers and schools heads was tabulated for reference purposes; secondly, an analysis was carried out of the mathematical performances of pupils from the different school types; thirdly, the mathematics scores and other information were appropriately analysed to test a number of specific hypotheses that had previously been formulated; fourthly, regression analyses were carried out using the mathematics scores as the criterion; and fifthly, the data collected in the survey were related to those obtained in the follow-up exercise.

The tabulation of the information obtained in the survey served a useful reference function: it was well known, for example, that there were more men mathematics teachers than women, but the precise figures in different types of school were not readily available; or again, it was generally assumed that the parents of fee-paying independent school pupils came from higher occupational groups than the parents of pupils in the maintained system, but the extent of this was not known. Similarly, information was not generally available on the comparative proportions of pupils attending independent, grammar, modern and comprehensive schools, with fathers in different occupational groups. The tabulation of the survey data provided a source of information of this kind for those interested in facts about the English education system. One or two items were perhaps of special interest. It was noted, for example, that mathematics teachers in modern schools had had very much less training than their counterparts in other types of school and, moreover, there were fewer of them with specialist training. The survey also showed that in the second and third forms of secondary schools about one eighth of those teaching mathematics had had no post-secondary training in that subject. This was noticeable not only in modern and comprehensive schools but also in independent schools. There were, however, very few mathematics teachers taking "A" Level pupils who had not received extensive subject training, although a not inconsiderable proportion had had no professional (i.e. pre-service teacher) training.

Still on the subject of training, it was perhaps surprising to note the relatively small proportion of teachers who had had any in-service training. This was true for all school types but was particularly noticeable in the independent and grammar schools. Perhaps to compensate for their lack of initial training, it was the teachers from modern schools who appeared most frequently to have attended in-service courses.

It is often argued in England that teaching is an underpaid profession and that standards would rise if teachers were paid more. This survey produced no evidence for that debate, but it was not without interest to note the average cost per pupil of teachers' salaries in the different types of school; this average cost was over £ 100 in the independent and direct grant schools, about £ 80 in grammar schools, £ 70–75 in technical schools, £ 65–70 in comprehensive, £ 55–60 in modern and £ 55–70 in the mixed bag of "other" schools. It is perhaps something of a surprise that despite a national salary structure for teachers so much variation was revealed in the cost *per pupil* among the different types of school.

One or two other points of general interest may be noted. Nearly 30 per cent of the fathers of independent school pupils taking "A" Level mathematics were in higher professional and technical occupations, compared with only 7 per cent of similar pupils in comprehensive schools. Also, 28 per cent of the mothers of these "A" Level mathematicians in independent schools received their own education in elementary or modern schools.

Mathematics Test Scores

One of the main findings to emerge from the examination of the mathematics test scores obtained by pupils in the different types of school was the fact that the comprehensive schools were not, in fact, comprehensive but were "creamed" of the brighter pupils. Some of the most interesting results, however, came from the comparison of the scores of boys and girls in segregated and co-educational schools. A straightforward comparison of these two kinds of school was not really legitimate, as proportionately more secondary modern and comprehensive schools are co-educational than are grammar and independent. However, within each type of school a comparison of the performances of boys and girls revealed the superiority of the former in all groups tested except those taking "A" Level mathematics. Such a result did not, of course, prove that boys are inherently more capable of achievement in mathematics than girls, but simply that the superiority existed with the groups tested. Indeed, the fact that with the group taking mathematics at "A" Level the girls did as well as the boys was evidence to the contrary. It was to be noted, however, that at this level there was only one girl to every five boys studying mathematics.

A further interesting fact to emerge from this particular analysis was that this superiority of boys was much less marked in co-educational schools than in segregated ones. If, as seems probable, this narrowing of the gap between the sexes was due to different attitudes being adopted in co-educational schools towards girls' ability to learn mathematics, it perhaps suggests one way of encouraging more girls to stay on at school and study the subject.

Attitudes towards Mathematics

It is by no means certain that the attempt in the international study to measure pupils' attitudes was entirely successful. The results obtained from the attitude measurements in England were similar to those found in the international project and showed little relationship existing amongst the five scales themselves and the mathematics scores of the pupils. A number of tendencies were, however, revealed, not all of which were expected. Compared with the 2nd and 3rd former, for example, the "A" Level mathematician, contrary to what teachers may have hoped, saw mathematics as more fixed and "given once and for all," as more difficult to learn and as having a lesser part to play in contemporary society. He also had less enthusiasm for school and was more inclined to the view that man is to some extent a slave of his environment. While these tendencies were only slight, not everyone will wish to share the view that one effect of an intensive academic secondary education is to make pupils more cynical.

Results of the Testing of Hypotheses

The hypotheses tested from the results of the survey in England, although formulated some time before the data were collected, were not devised to fit in with any conceptual framework as had been the case in the international study. Rather a number of educationists and mathematicians, who had been connected with the project and were familiar with the variables on which data were to be gathered, were asked to set down those hypotheses which they thought could be usefully tested. These were discussed at a number of meetings and in course of time some were dropped and others amended. Those that remained were grouped under three headings: class and school organisation; the mathematics curriculum; and teachers of mathematics.

For many of the hypotheses examined, the survey data were insufficient to lead to any definite conclusion. The one concerned with class size fell into this category and the results obtained only confirmed what other research had shown, namely that the relationship between class size and achievement was far from simple and could probably only be unravelled by a more determined experimental attack on the problem. Unfortunately also, the attempt to use the results of the survey to investigate the merits of the practice of streaming had to be abandoned owing to the small number of secondary schools that did not stream in one way or another. A comparison of schools which streamed with others which "setted" their pupils in mathematics suggested a slight advantage for the latter. This was confined, however, to the younger pupils in the age groups from which selection had not yet taken place.

Comparison of Different Types of Schools

With the advent in England in recent years of large comprehensive schools, interest has been aroused in the question of whether a school can perhaps be too big – whether or not, that is, something suffers if it gets beyond a limiting size. The data in the present survey only permitted an investigation into the relationship between mathematical achievement and size of school and could not examine, for example, whether a large school had an adverse effect upon the personality development of pupils. The overall results tended to suggest that sheer size was not of itself important in determining the level of mathematical achievement. Certainly it appeared to be true that pupils taking "O" and "A" Level G.C.E. examinations performed just as well on the average whether they came from small or large schools. There was some evidence that within the independent school category, better performance came from the larger schools, but this was probably because the larger schools of this type attracted the more able pupils. There was, however, no evidence to suggest that pupils in the larger comprehensive schools performed in mathematics any less well than those in smaller ones.

When this survey was planned, it was hoped that the data would shed some light on the controversial issue of comprehensive versus tripartite schools. Reasonably large samples of schools in both these categories were involved and hence a comparison, in terms of mathematical performance, was possible. However, as has already been pointed out, it became clear that the comprehensive school sample was not truly a representative one, probably for the reason that this type of school has not been in existence long enough in England for it to be able to attract its fair share of the more able pupils. In fact, at the time of the survey most comprehensive schools were to be found in local education authorities which still had some form of 11+ selection procedure, with competing grammar schools. The results obtained, therefore, had to be examined with considerable reserve. They showed a not unexpected superiority of the tripartite school pupils in each of the age groups studied. The differences, however, were not all as large as might have been anticipated in view of the limitations in the comprehensive school sample and suggested that any final verdict must await further research.

Another comparison of interest was that between the independent and maintained school systems. Like that between the comprehensive and tripartite schools, however, it was not straightforward. Pupils attending the independent schools possessed different characteristics from those within the maintained system. It was well known, for example, that pupils from the independent schools came from homes that were superior on average, not only in terms of socio-economic class, but also in terms of the interests and aspirations of the parents. A direct comparison in the two kinds of school therefore revealed, as anticipated, that the fathers of the independent pupils had had on average a longer and presumably better education and were to be found in occupations of higher status. It was not surprising to find that the pupils themselves performed better in mathematics.

It could be argued that a more realistic comparison was that between the independent (and direct grant) schools on the one hand and grammar schools on the other. In this comparison it was again found that in all age groups tested a clear advantage in terms of the fathers' education and occupation remained with the former, and yet, with the exception of the "A" Level candidates, it was the pupils in the grammar schools who showed the superior mathematics test performance. This did not, however, necessarily imply that the teaching in the grammar schools was more efficient than that in the independent schools, since it must be remembered that selection for the former was based largely on ability and achievement and that for the latter on parental income, which must be fairly highly correlated with fathers' education and occupation. In these circumstances there was inevitably a regression towards the mean on variables other than the ones used in selection, and it was possible that the virtual equality of mathematical performance on the part of the "A" Level candidates from both kinds of school really pointed to a superiority for the pupils from the independent schools. In view of the advantages conferred upon these latter pupils by way of smaller staffing ratios and better qualified teachers (cf. the relative amounts of per pupil expenditure on teachers' salaries), such a result was not unexpected.

One further comparison that it was possible to make from the survey data was that between boarding and day school pupils in the independent sector. The analysis revealed that with both the thirteen-year-olds and the "A" Level candidates, the parents of boarding school pupils had a distinct advantage over those of day school pupils in terms of education and status of occupation, yet while the mathematical performance of the boarding pupils was, as expected, superior at the thirteen-year-old level, it was clearly inferior at the pre-university level. No doubt many explanations will be provided for this somewhat unexpected result; it is suggested that a principal cause may well be that boarders lack intimate parental contact and the encouragement it provides; over the period of secondary schooling this might well reduce the motivation for school work and result in lower performances. Such an explanation is supported by other recent research work which suggests that the important factor in success is not the more fixed material and economic conditions of the home background, but the interests and attitudes of the parents.

Much attention has been drawn in the past to the element of unreliability in 11+ examinations – a factor which tends to produce an overlap in performance of pupils in modern and grammar schools. However, few modern schools have pupils to match the brightest to be found in grammar schools and it was not unexpected, therefore, that the mathematical performance of "O" Level G.C.E. candidates in grammar schools exceeded that of similar candidates in modern schools. In this study it was hypothesized that the introduction of G.C.E. courses in modern schools would have a motivational effect and this was examined by comparing the performance of pupils in modern schools which entered pupils for the G.C.E. with that of pupils in other such schools which did not. While the results demonstrated clearly the superiority of the former schools, it cannot be concluded that this was due even partially to motivational effects, as many other factors were also operating. It did suggest, however, a useful line for further enquiry.

Relationship between Achievement and Curriculum

The relationship between the amount of time devoted to a subject at the sixth form level and achievement in that subject is not without interest for its implications for widening the curriculum. A careful analysis of the data in this survey demonstrated that a positive relationship did exist between the number of periods of mathematics per week and achievement in this subject; it also showed that there were considerable differences in the number of mathematics periods to which pupils were exposed. This number, however, depended upon the particular course being followed by a pupil and this, in turn, to some extent upon his mathematical ability. It was clear that a more detailed study would be required to sort out this problem, but again the results obtained suggested that such a study would be well worth while.

The time devoted to a subject is, of course, closely associated with the number of subjects studied, and in a country like England with its high degree of subject specialisation, an investigation in this area is clearly important. The results from the present study revealed a lack of any relationship between the number of subjects studied by thirteen- to fifteen-year-olds and their achievement in one of them – mathematics. At the level where intense specialisation exists – the sixth form – the relationship however became clearly positive. It is a matter of debate, of course, as to whether studying more subjects leads to a better performance in one of them, or whether a better performance in mathematics implies a brighter pupil who, as a result studies more subjects. There might be an inclination to reject the former explanation, but it should be noted that the international study provided certain evidence to suggest that pupils in countries where eight or more subjects are studied in the pre-university year, performed on average in mathematics as well as pupils in countries where only three or four subjects were studied.

Specialist Teachers

At the time this research was being planned there was considerable interest in the "new mathematics" – hence a number of analyses were devoted to this aspect of the subject. In the first place, it was discovered that the pupils of teachers who said they were teaching the "new mathematics" produced an overall superior performance in the mathematics tests given, compared with the pupils of teachers who said they were not teaching it. This superiority, however, was no more marked on the subtests involving set theory or specific "new mathematics" items than it was on any other group of items. Why then the superiority? Further analyses revealed that the teachers who taught the "new mathematics" tended to be specialist teachers and to teach only mathematics, and the results showed clearly that the pupils of the specialist teacher – that is, in this context, the mathematics teacher who had received his subject training at a university – produced a highly superior performance on the mathematics test, and also showed a greater interest in the subject. They showed furthermore that the teacher who taught only mathematics also tended to produce a better performance in his pupils, probably because he was a specialist teacher.

Where were these specialist teachers to be found? The data reveal that, on the whole, the selective schools had the advantage, but largely because the demand for the specialist teacher came from the sixth form, and these were biggest in grammar and independent schools. The specialist teacher was not to be found to such an extent lower down the school, though it might be argued that if such a teacher did tend to produce better results in his pupils, then it would be an advantage to increase their numbers. According to this survey, one-third of the mathematics teachers in grammar schools, just under one half of those in comprehensive schools, and three-quarters of those in modern schools were not specialist in the sense used here.

Teacher Influence

Three further results emerged from this set of analyses. In the first place, it was shown that the younger pupils of teachers who also taught the sixth form, consistently tended to produce higher performances, probably because they had the better teachers, and the teachers, being better, tended also to be given some advanced level teaching. Secondly, there was some evidence to suggest that pupils in the maintained system who had had the same teacher for more than one year did better than those who changed teachers each year. This again was an interesting result that needs confirmation from other studies, for many of the schools in the survey appeared to time-table a different teacher each year for most of their pupils. This particular result was completely reversed in the independent school category, possibly due to the practice of grade repetition in which it would be the less able pupil who remained with the same teacher for more than one year. It should also be borne in mind that many of the bigger independent schools only took in pupils at the age of thirteen. The final result concerned the degree to which teachers felt themselves to be free from restraints such as might be imposed by an examination or set syllabus, text-book or teaching method. There was a slight tendency for the specialist teacher with the longer experience and coming from the more selective school to perceive himself as having rather more freedom than the less well trained, relatively inexperienced teacher from the comprehensive or modern school. There was also some suggestion that the thirteen- to fifteen-year-old pupils whose teachers perceived themselves as not being unduly restricted tended to do rather better in mathematics than the pupils of teachers who felt their freedom was rather more restricted.

Regression Analysis

Whilst it was useful and illuminating to examine specific sections of the data in order to produce evidence which might help to answer distinct questions, it was also both instructive and rewarding to carry out an overall analysis which not only examined the relationship which each of the many independent variables considered in this study bore to the educational outcome (mathematical achievement), but also examined the contribution which each made in accounting for the outcome when its relationship with all other independent variables was duly considered. The results of the regression analysis which was carried out gave added confirmation to other research findings that stressed the importance of home background factors in determining the motivation which drives pupils to succeed in school. The one variable which stood out in this analysis was that representing the selectiveness of the types of school attended, largely because this variable not only contained the past effort of the pupil himself, but also reflected the influence of the attitudes and interest which stem from his home background. The part played by the family and type of school variables in fact completely outweighed that resulting from the school variables, although the latter were clearly not unimportant. Among the school variables, homework, staffing ratio and the mathematical training of teachers stood out – a result perhaps not altogether unexpected.

Relationship between Length of Schooling and Status of Occupation

Although from the international point of view this was entirely a survey research, the opportunity of relating the performance of the English pupils on the mathematics test to the G.C.E. examinations which many of them subsequently took was too good to miss. This information was therefore collected, as were data on the occupation or further education of all school leavers. From a great deal of interesting evidence, it was noted that, as expected, the highest proportion of "O" Level candidates staying on at school was to be found in the independent school category (79 per cent). For comprehensive schools the figure was 46 per cent, compared with 32 per cent for modern schools and 63 per cent for grammar. It was also noted that the advantage of staying on at school was reflected in the fact that while only about one-fifth of the fifteen-year-olds leaving school obtained work which was of a skilled or higher status, the proportion rose to two-thirds for those who stayed to take their "O" Levels and to over 90 per cent for those remaining in school for "A" Levels. A further point of interest was the fact that of the "A" Level candidates who were continuing their education, a much higher percentage of non-mathematicians than mathematicians proceeded to Colleges of Education, and of those that did, far more came from grammar schools than from independent or direct grant schools.

Correlation of Test Scores with G.C.E. Examination Results

The correlation between the mathematics test scores and "O" Level grades in elementary mathematics were surprisingly high, varying between .61 and .73 for the four Examining Boards in which investigation was possible. In two of the Boards, the Oxford and the Cambridge, the "O" Level correlations with the Lower Mental Processes sub-score were higher than with the Higher Mental Processes sub-score. Using the mathematics test as a calibrating instrument revealed no differences in standards in the four Boards compared at this level. There was some evidence to suggest, however, that examiners in all Boards found it difficult to attach separate and distinguishable meanings to "Grade 4" and "Grade 5."

The correlations at "A" Level between the mathematics test and grades in the pure mathematics papers were even higher, ranging from .67 to .87 for the five Boards on which comparisons were made at this level. Obtained as they were from highly selected groups of pupils these correlations must be regarded as giving very satisfactory evidence of the tests' validity. Comparisons across the five Boards at this level showed no serious departures from a common standard, except for some evidence that the candidates for the Oxford and Cambridge Boards' examinations consistently obtained higher test scores, grade for grade, than candidates for the examinations of other Boards. The number of candidates involved in these particular analyses was not large and it is not safe to draw firm conclusions. The results, however, strongly suggested that a more detailed study along the lines employed in this investigation should be undertaken.

Conclusion

The English national survey of mathematics briefly reported in this article was not undertaken with a view to making specific recommendations. It was largely concerned with producing evidence, some of a general kind, some more detailed, that might be of value in the decision-making process for teachers, educational administrators and policy makers. That the educational outcome was measured solely in terms of one subject – mathematics – might appear to have imposed certain limitations on the generality of some of the findings. However, the National Foundation for

Educational Research in England and Wales is participating in the current phase of IEA, and it is intended in 1970, when the main field work is carried out for the international study, to repeat the national survey in other subject areas.

DATENANALYSE FÜR ENGLAND

von DOUGLAS A. PIDGEON, London

Das Testen großer repräsentativer Stichproben von Sekundarschülern für die *IEA*-Mathematik-Untersuchung bot in England Gelegenheit, eine *survey*-Studie auf nationaler Ebene durchzuführen. Die Stichprobenbildung wurde daher auf Schüler der dritten bis sechsten Klassen aller Typen staatlicher und privater Schulen ausgedehnt. Bei der Durchführung der Studie hatten die Schüler einige zusätzliche Fragen zu beantworten und viele der Befragten wurden auch in ihrer weiteren Entwicklung beobachtet, sodaß Daten über ihre Prüfungsergebnisse, ihre Pläne hinsichtlich ihrer weiteren Ausbildung und gegebenenfalls über ihre Tätigkeit nach Verlassen der Schule gewonnen werden konnten. Die von Schülern, Lehrern und Schulleitern erhaltenen Daten wurden für Auskunftszwecke gesammelt, während die Testwerte in Mathematik für entsprechende statistische Analysen verwendet wurden, um sowohl eine Reihe vorher formulierter Hypothesen zu testen, als auch die Beziehungen zwischen den Mathematikleistungen und den bei der weiteren Beobachtung der Schüler gewonnenen Daten zu untersuchen.

Die Studie erbrachte Einsichten in die Ähnlichkeiten und Unterschiede zwischen den verschiedenen Schultypen in England, z.B. mit Hinblick auf Faktoren wie Aus- und Fortbildung der Lehrer und durchschnittliche Kosten pro Schüler in den Lehrergehältern. Sie ermöglichte auch Vergleiche zwischen den relativen Lernleistungen von Jungen und Mädchen in Jungen- und Mädchenschulen und in koedukativen Schulen.

Die getesteten Hypothesen betrafen Fragen der Klassen- und Schulstruktur bis hin zu Problemen der Mathematiklehrpläne und Mathematiklehrer. Im Rahmen des ersteren Fragenkomplexes wurden Vergleiche zwischen den Lernleistungen in staatlichen und in privaten Schulen und zwischen privaten Tages- und Internatsschulen durchgeführt. Die Ergebnisse machten die Schwierigkeiten deutlich, die beim Vergleich mit den neuen *comprehensive schools* entstehen. Andere Hypothesen betrafen Aspekte der Lehrplanspezialisierung in englischen Schulen sowie die Wirkung des Unterrichts von gut ausgebildeten Fachlehrern auf die Mathematikleistungen der Schüler.

Die weitere Beobachtung der Schüler erbrachte interessante Daten über das Verhältnis von Dauer des Schulbesuchs und Art der späteren Tätigkeit und bestätigte aufgrund von Korrelationen mit den englischen externen *G.C.E.*-Examen den hohen Gültigkeitswert der *IEA*-Mathematik-Tests.

ANALYSE NATIONALE D'ANGLETERRE

par DOUGLAS A. PIDGEON, London

Le test de grands échantillons d'élèves secondaires pour l'étude en mathématique entreprise par l'*IEA* a été l'occasion en Angleterre de procéder à une analyse nationale systématique. Cet échantillonnage a été étendu du 3° au 6° degré pour

comprendre des élèves de tous les types d'écoles indépendantes et publiques. Des questions complémentaires ont été posées aux élèves au moment de l'étude, et rassemblées de manière à pouvoir obtenir des renseignements sur les résultats de leurs examens, leurs projets d'éducation future et leurs activités professionnelles, s'ils avaient quitté l'école. Les renseignements obtenus de la part des élèves, des professeurs et des directeurs d'école ont été disposés sous forme de tableaux à des fins de références, tandis que des analyses statistiques ont été effectuées sur les résultats obtenus dans les tests de mathématiques dans le but de contrôler un certain nombre d'hypothèses formulées précédemment et d'examiner les rapports entre les résultats mathématiques et les résultats obtenus dans cette analyse suivie.

Cette étude a montré clairement les similitudes et les divergences qui existaient parmi les différents types d'écoles anglaises, comme par exemple en ce qui concerne les éléments de la formation initiale et de la formation en cours de fonction des enseignants, et les frais moyens par élève des salaires des professeurs. Elle a également permis de faire des comparaisons entre les résultats acquis par des garçons et par des filles à la fois dans les écoles mixtes et dans les écoles séparées.

On a contrôlé les hypothèses relatives à l'organisation de l'école et de la classe, au programme d'étude de la mathématique et aux professeurs de la mathématique. Dans le premier groupe des comparaisons ont été faites entre les secteurs indépendants et publics du système d'éducation anglais et entre les écoles du jour et les internats dans le secteur indépendant. Les faits ont également mis en lumière les difficultés que l'on rencontre dans l'établissement de comparaisons comprenant les nouvelles écoles polyvalentes (*comprehensive schools*). D'autres hypothèses comprenaient les aspects de la spécialisation des programmes d'étude dans les écoles anglaises, et les conséquences sur les résultats en mathématiques, si les élèves ont été enseignés par les professeurs compétents et spécialisés.

Cette étude suivie a révélé quelques points intéressants sur les rapports existant entre la durée d'écolage et le statut de l'activité professionnelle ultérieure, et a aussi démontré au moyen de corrélations avec les examens du *G.C.E.* anglais, la grande valeur des tests mathématiques de l'*IEA*.

NATIONAL ANALYSIS: FINLAND

by Paavo Malinen, Jyväskylä, and Vesa Lyytikäinen, Helsinki

The Weighting of Different Strata in Populations 1a and 1b

In a large study such as IEA there is an interval of a year or two between the preparation of the sampling design and the test administration. This caused small differences in the proportion of students in the different strata in Finland.

When the sampling of this study was carried out in spring 1963, it was based on the number of students in the school year 1961/1962 since those were the latest statistics available. In view of the structure of the school system two strata were used: (a) students who had gone to secondary school after the fourth school year (selective academic schools) and (b) students who had remained in the elementary school or in its higher

grades called civic school (elementary schools which receive the remainder). In the school year 1961/1962 out of the total seventh grade school population 40 percent were in secondary school and 60 percent in elementary school, whereas, during the time of testing two years later the figures were 42 and 58 percent respectively. The number transferring to secondary schools has increased since then so that in the autumn of 1967 about half of the whole age group was in secondary school.

The weighting of the different strata had thus changed to some extent during the study but changes also occurred in the study material for technical reasons. In Population 1b 41 percent of schools were secondary schools and 59 percent elementary schools,1) but of the total number of pupils 34 percent were in secondary schools and 66 percent in elementary schools.2) These rather small variations in the weighting of the different strata are relevant to the results from Finland because the difference between the means of the two strata is quite large. The uncorrected mean of the secondary school students was 33.1 and that of the elementary school students was 18.0. By using the weights .35 and .65, the uncorrected mean of the whole of Population 1b becomes 23.3 (corrected mean 16.1). If again the weights .42 and .58 are used, the uncorrected mean is 24.2 (corrected mean according to estimation 16.7). In addition, this result has to some extent been affected by the fact that the secondary school group has come to show lower standards as it has increased its intake and similarly the elementary school group as more of its best pupils have gone to secondary school.

In this study the variations in the sample weighting biassed the results somewhat less than 5 percent, as has been shown in the above. This was because there were changes in the population during the time of study. Similarly, the amount of secondary school students in Population 1a had decreased, since students more than 13 years old were excluded from the study of the seventh school year, while there are more of such students in secondary schools. Small deviations of this sort, however, have no essential effect on the final results and it would have been difficult to take them into consideration when the study was being planned.

In Finland an error occurred in the computing of the results of the 13-year-olds when the data concerning over 400 students were left out. If those 400 pupils had been elementary school students, the weights in Population 1b would have been: secondary school students .55 and elementary school students .45, with reference to the results presented in the study. According to what has been said above these weights would not have been very distorted, even if secondary school students have received undue weight. Obviously there have been some other changes in the data processing, because the percentage of secondary school students is reported to be .95 and that of elementary school pupils only .05 [3]) in Populations 1a and 1b and because the corrected mean for Population 1b, according to this erroneous information, is as high as 26.4. A differential weighting of this size gives a completely wrong picture of the Finnish situation; the most important corrected statistics can be seen in Volume II, pp. 360–361.

Comments on the Analysis of Results and Mathematics Curricula: Populations 1a and 1b

Since the prepared mathematics tests were surveys of how students master a very diverse field of topics, they naturally do not fit national curricula very well. As regards Finland this was clearly seen in that our students during the first six years do a lot of exercises involving the transforming of denominate numbers, exercises connected with trade and commerce and exercises pertaining to home life, whereas, there were few such exercises in the tests. The teaching of algebra and geometry does not start until the seventh school year; thus most of the items dealing with these content areas were unfamiliar to the students. Elementary school students have had only a certain amount of applied geometry over and above arithmetic.

The Finnish students did relatively well on items belonging to "New Mathematics." This drew the report-writers' attention especially as the teachers had reported that they had not taught "New Mathematics." [4]) This is true, because none of the participating schools during the questionnaire stage had modernized their syllabi. There is, however, an explanation of this result. As far as Finland was concerned, the assumption that items A-12, A-17 and A-23 are taught in modernized courses only was not true.[5]) Subject-matter like this has belonged to the Finnish secondary school syllabus for dozens of years and these students had learned it at the beginning of their algebra course in the seventh school year before the time of testing. When in the analysis of results the weighting of secondary schools was very strong owing to the afore-mentioned mistake the result is explained.

The concept "new mathematics" is not familiar to Finnish teachers in the sense that it is, for example, to American teachers because the modernization starting point is different. When teachers were asked, with reference to those particular items, if they had taught "new mathematics" to their students, their answers displayed a great diversity.[6]) Although, the syllabus was not modernized in any of the participating schools, some of the teachers chose the second alternative or left the question unanswered as unclear. Consequently, no relevant conclusions can be made as regards Finland on the basis of this classification.

As no national study of achievement in mathematics had been carried out in Finland up to the time of the IEA study it was possible to make some additional analyses on the basis of the detailed data obtained by the National Center, for example, to compare the results of elementary schools working under different circumstances. In those communities where the turnover to secondary schools is great the scores of elementary school students were on average rather low. However, there were elementary schools (civic schools) where the level of achievement was higher than in some small secondary schools. It should be noted, however, that the participating groups were not whole classes but students chosen at random from different classes.

A comparison between students in different educational milieux showed that secondary school students were clearly better in terms of the subscores in algebra and on items classified as higher mental process items. The differences were smallest in geometry where the scores of both elementary and secondary school students were rather low. These results showed clearly existing differences in curricula and particularly the fact that many elementary schools have mathematics only in an applied form in the seventh school year. It was difficult to find subscores which would be independent of the curriculum and which would show aptitude differences between the students. It is obvious, however, that in elementary schools there are many students who could manage the secondary school course in mathematics.

Finland produced very few high scores. The secondary school has expanded its intake and as a result has more fairly weak students but it has not succeeded in arranging its within-school organisation in such a way that the more talented students could receive the kind of teaching that would correspond with their potential. This viewpoint has been borne in mind when planning a nine-year comprehensive school in Finland in which there would be three levels in mathematics in the seventh through ninth school year. In the advanced group it would be possible to proceed farther and faster than in the present secondary school.

Populations 3a and 3b

During the testing period the students in Populations 3a and 3b were distributed so that the students belonging to Population 3a studied mathematics 5 + 5 + 5 hours a week in the three-year upper secondary school and the students of Population 3b studied 3 + 3 + 3 hours a week respectively. There was no compulsory final examination in mathematics (matriculation examination) for either group, although, a large proportion of 3a students sat for it. The students could choose either of the two alternative final examinations: mathematics examination vs. *realia* examination which included questions from five subject areas: (1) Religion, (2) Psychology and Philosophy, (3) History, Civics and Economics, (4) Physics and Chemistry, (5) Biology and Geography. Since 1966 the situation has changed so that all 3a students take a compulsory mathematics examination in the matriculation examination. This has resulted in a new distribution of students in the upper secondary school. The proportion of 3a to 3b at the time of testing was about 1:1, while it is now 3:4. Students who are weaker in mathematics have chosen 3b.

Since only students in the final grade of the upper secondary school participated in the study it must be noted that some students, some of whom are specifically gifted in mathematics, go to technical schools and colleges after the lower secondary school. These students comprise about 2 percent of the whole age group and over 10 percent of the total amount of the upper secondary school age group. A corresponding turnover takes place in several countries.

As regards Population 3b it may be reasonable to point out that in Finland this is not the same as the *non*-mathematical track but students who belong to that course of study read mathematics throughout the upper secondary school (3+3 + 3 hours as explained in the above) and have the possibility of taking the so-called shorter examination in mathematics instead of the *realia* examination. This possibility, however, is seldom used since there are only some hundred such students per year.

Syllabus and Teaching Method in the Upper Secondary School

The syllabus of the upper secondary school mathematics course dates from 1960 (that of the lower secondary school from 1958). The syllabus of the language track (3b) has traditionally been a dependent whole and a kind of précis of the syllabus of the mathematical track (3a). Experiments carried out by the Nordic Committee were under way during the time of the present study in dozens of Finnish upper secondary schools. Students of these experimental classes were not included in the present study because they represented a relatively small portion of the students from more than 300 upper secondary schools and the experiment did not yet affect the final grade.

The performance of Finnish upper secondary school students was average in an international context but top performances were almost completely non-existent. One reason for this may be that mathematical top-performers tended to be clustered in the experimental schools which were left out of the study. These schools follow a more flexible syllabus and the teachers and students are carefully selected.

It is also thought that the matriculation examination has harmful effects on mathematics teaching in the upper secondary school. Since a great part of our students (after taking the matriculation examination) cannot continue their studies in the universities or other higher educational institutions because of the lack of staff and room facilities (which lack was greater at the time of the study than it is at the present time) high marks in the matriculation examination have a great weight in the competition for admission. Therefore, the study of mathematics in the upper secondary school easily becomes a mere preparation for the matriculation examination and a more profound study of mathematics proper is neglected. The voluntary extension of mathematics instruction remains a special feature of the experimental schools because they usually have more weekly hours for mathematics instruction than ordinary schools.

Moreover, the teaching tradition has remained very much the same as in the lower secondary school. One characteristic of it is that it is rather teacher-centered. Student performance is improved by means of extensive homework. Because of large classes and relatively few teaching hours (five hours a week per class in the mathematical track, 190 working days a school year, approximately 110 working days during the last school year) there is hardly any time for individual treatment of students. Assigning special tasks for mathematically talented students is fairly uncommon in our schools.

Although, the amount of foreign language study does not usually affect the time reserved for the study of mathematics the scarcity of teaching hours in mathematics is partly due to the heavy language study programme in our schools. Finland is a bilingual country where 13-year-olds study another national language (usually Swedish) and one foreign language besides the mother tongue (which in more than 90 percent of all cases is Finnish). In the upper secondary school another foreign language is compulsory for every student over and above the languages started earlier. The amount of teaching hours varies, however, between the mathematical track and the language track.

Teaching Staff

At the time of the IEA field testing the shortage of formally qualified mathematics teachers was greatest in our secondary schools. About 50 percent of all mathematics hours in the secondary schools were taught by unqualified teachers. Country and small town schools suffered most from this state of affairs. Only the situation in the capital was fairly satisfactory.

Elementary school teachers had had no formal study in the subject matter (mathematics) because it was not part of their training.

Differences in Achievement between Boys and Girls

The results showed that boys performed better than girls in all populations. The Finnish situation is best illustrated by the figures which are taken from the national matriculation examination of the mathematical track (3a) in 1967. These are given in the Table.

TABLE

Distributions of Mathematics Grades in Matriculation Examination in 1967

		Percent of grades obtained					
	N	L (3p.)	C.1. (2p.)	A (1p.)	I (0p.)	Mean p.	S.D.
Boys	4457	18.04	40.85	33.68	7.43	1.695	0.849
Girls	1944	9.36	37.29	44.14	9.21	1.468	0.788

Scale

At item level:	*At grade level:*
0– fail	0p. – fail; *Improbatur*
1–2 fair	1p. – pass; *Approbatur*
3–4 satisfactory	2p. – satisfactory; *Cum laude approbatur*
5–6 excellent	3p. – excellent; *Laudatur*

The examination consists of 12 items of which the students choose only 10. Each paper is marked by a central board of examiners which also prepares the test. The papers are preliminarily marked by the students' own teachers. Each item is scored on a 0–6 point scale. The final grade is determined by the sum total obtained and by the quality of performance. For the highest grade (*Laudatur*) the number of points needed is usually 40, for the intermediate grade (*Cum laude approbatur*) 25 points. To obtain a passing grade (*Approbatur*) at least three items must be satisfactorily solved (3 to 4 points per item). The afore-mentioned guidelines can be altered somewhat every year when preliminary grade distributions have been computed. An attempt is made to keep the grade distributions of successive years close to each other.

What International Studies Mean to our Country

The IEA mathematics study, in which the effects of various variables were analyzed, revealed very clearly the weaknesses and defects which our mathematics teaching has been suspected to have. In Finland during the first six school years students work extensively on verbal problems and application problems. Thus there has not been enough time left for an adequate treatment of basic mathematical principles.

When we, in the immediate future, start the revision of our mathematics syllabus in accordance with the Nordic Committee's guidelines and have to consider how to carry out educational reforms in the teaching of mathematics in the lower secondary as well as in the upper secondary schools and how to solve the training problems of mathematics teachers, we can obtain invaluable information from the facts and findings of this international study.

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3) *Op. cit.*, Vol. I, pp. 277–278.
4) *Op. cit.*, Vol. II, p. 31.
5) *Op. cit.*, Vol. II, pp. 191–192.
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DATENANALYSE FÜR FINNLAND

von PAAVO MALINEN, Jyväskylä und VESA LYYTIKÄINEN, Helsinki

In Finnland waren zwei Schülergruppen (*strata*) in den Populationen 1a und 1b vertreten: Schüler von (nicht selektiven) Primarschulen und Schüler von (selektiven) Sekundarschulen. Der relative Anteil von Sekundarschülern ist jedoch in den letzten Jahren gewachsen, sodaß es selbst während der Dauer der Untersuchung zu Veränderungen der anteiligen Repräsentanz beider Schülergruppen kam. Dieser Umstand verursachte eine leichte Tendenz in der Gewichtung der Ergebnisse. Einige Lehrplananalysen und Vergleichsuntersuchungen der Leistungen von Primar- und Sekundarschülern ließen einen gewissen Vorsprung der letzteren erkennen. Die größten Unterschiede ergaben sich in Algebra, die geringsten in Geometrie; hier schnitten beide Schülergruppen gleich schlecht ab. Es scheint jedoch erwiesen zu sein, daß ein beträchtlicher Prozentsatz der Primarschüler den Mathematikkurs für Sekundarschüler bewältigen könnte.

Die Hauptanalyse ergab ziemlich überraschend eine relativ hohe Punktzahl der Sekundarschüler in "moderner Mathematik," obwohl ihre Lehrer mit diesem Gebiet nicht vertraut waren. Eine Erklärung für dieses Ergebnis ergab sich bei der Untersuchung des Inhalts der Testaufgaben über "moderne Mathematik" in dem Umstand, daß einige dieser Aufgaben zum traditionellen Unterrichtsstoff finnischer Schulen in Algebra gehörten.

In den Populationen 3a und 3b waren dagegen nur Schüler eines Schultyps vertreten, da sich die Untersuchung nicht auf Versuchsschulen und technische Schulen usw. erstreckte. Diese Beschränkung hat wahrscheinlich – wie auch in anderen Ländern – die Ergebnisse über das durchschnittliche Leistungsniveau beeinträchtigt. Bei der Diskussion des Lehrplans und der Lehrmethoden der Sekundarschulen stellte sich heraus, daß das Abschlußexamen (*matriculation examination*) offenbar auch einen negativen Einfluß auf den Mathematikunterricht der Sekundarschuloberstufe

ausübt, da es häufig bewirkt, daß der Mathematikunterricht auf eine Reihe von Prüfungsgegenständen beschränkt und ein gründliches Studium der eigentlichen Mathematik vernachlässigt wird. Diese Auswirkungen werden durch eine verhältnismäßig stark auf den Lehrer ausgerichtete Lehrmethode und umfangreiche Hausaufgaben unterstrichen, die nur selten den individuellen Fähigkeiten und Bedürfnissen der Schüler angemessen sind. Schließlich wurden einige Ergebnisse dieser Studie mit der Beurteilung der Schüler im Abschlußexamen der Sekundarschule verglichen.

Die internationale Untersuchung ist für weitere Lehrplananalysen auf nationaler Ebene sowie mit Hinblick auf künftige Reformen in Schule und Lehrerausbildung wichtig.

ANALYSE NATIONALE DE FINLANDE

par Paavo Malinen, Jyväskylä et Vesa Lyytikäinen, Helsinki

En Finlande, il y avait deux couches des Populations 1a et 1b: les élèves de l'école primaire (non sélective) et ceux de l'école secondaire (sélective). La proportion relative des élèves de l'école secondaire a augmenté ces dernières années, de sorte que des modifications se sont produites au cours de l'étude, dans les proportions. Ceci a influencé l'appréciation des résultats. On a entrepris une analyse des programmes d'étude et un examen des résultats obtenus par les élèves primaires et secondaires, qui ont fait apparaître un certain avantage pour ces derniers. La différence est la plus grande en algèbre et la plus petite en géométrie, où des résultats plutôt mauvais ont été enregistrés pour ces deux couches de population. Il semble probable cependant qu'une bonne partie des élèves de l'école primaire pourraient suivre les cours de mathématiques du secondaire.

Dans l'analyse principale, on a découvert avec surprise que les élèves de l'école secondaire obtenaient des résultats relativement bons en "mathématiques modernes," alors que ce sujet n'était pas bien connu des professeurs. On a cherché l'explication en contrôlant le contenu des sujets de la "mathématique moderne," dont on a découvert que certains appartenaient au programme d'étude traditionnel d'algèbre en Finlande.

Il n'y eut seulement qu'une couche de type d'école pour les élèves des Populations 3a et 3b, parce que les écoles expérimentales et techniques n'ont pas été comprises dans cette recherche. Cette sélection a probablement fait baisser le niveau moyen des résultats, comme cela s'est produit dans d'autres pays. On a discuté le plan d'études et les méthodes d'enseignement des écoles secondaires et on a observé que l'examen de fin d'années secondaires a aussi apparemment un effet néfaste sur l'enseignement de la mathématique dans les trois dernières années secondaires, car il a tendance à limiter la formation en mathématiques pour couvrir un ensemble de sujets communément contrôlés et que l'on néglige une étude plus approfondie de la mathématique. Cet effet se fait sentir par la méthode d'enseignement plutôt orientée vers le professeur et par les devoirs qui sont rarement appropriés aux besoins et aux capacités des élèves. A la fin, certain résultats ont été comparés avec la répartition des résultats obtenus lors de l'examen de fin d'années secondaires.

Cette étude internationale peut être considérée comme importante pour de futures analyses des programmes d'étude de même que pour l'école et les réformes de la formation des enseignants qui auront lieu à l'avenir.

NATIONAL ANALYSIS: JAPAN

by SHIGERU SHIMADA, Tokyo

Definition of the Populations and Sampling in Japan

Definition

Populations 1a and 1b. In Japan, 99.7% of the 6-year-old population enter the elementary school on April 1st each year, and progress by one grade each year without acceleration, or grade-repetition, except in the case of a long period of non-attendance. The percentage of grade-repeaters in the 2nd grade of the lower secondary school, where the majority of pupils aged 13.0–13.11 are found in April, was estimated as 1.2% in 1962. As it was agreed internationally for this project that 1b would be the grade where the majority of the 13-year-old pupils were found within 3 months of the end of the current school year, the two populations 1a and 1b would coincide with each other with negligible exceptions if the test were administered in April. We therefore decided to administer the test in April (the beginning of the school year) to the 2nd graders of the lower secondary school only, and adopted them as both 1a and 1b.

Population 2. We defined Population 2 as all pupils in the 3rd grade of the lower secondary school, since this grade is the last grade of compulsory education in Japan.

Population 3. We defined Population 3 as all pupils in the 3rd grade of the upper secondary school. In 1960, there were four types of Mathematics programs for these pupils, namely, (a) Mathematics I only, (b) Mathematics I and II, (c) Mathematics I, II and III, and (d) Mathematics I (or I and II) and Applied Mathematics. Population 3a was defined as those pupils in the 3rd grade who were learning more than 4 hours per week of Mathematics III or Applied Mathematics, i.e. those taking the full program of the type (c) or (d), and population 3b as the remainder. This distinction was made after requesting information from each school in the sample as to the actual programs given to each pupil.

The tests for Populations 2 and 3 were internationally scheduled to be administered towards the end of the school year, but many schools in Japan are, for various reasons, generally so busy at this time of the year that they might not be able to participate in such a survey. So, after consultation at the Council Meeting, we decided to administer these tests during the early part of the school year, i.e. for Population 2 at the beginning of July and for Population 3 at the end of June. This meant that for Populations 2 and 3 the tests were administered about 9 or 10 months earlier than scheduled, and the effect of this will be examined later.

Sampling Procedure

The sample design in Japan was developed with the cooperation of researchers in the Institute for Statistical Mathematics. The design used was that of stratified two-stage random sampling: the first-stage sampling unit was a school in the case of Populations 1 and 2 and a course in a school in the case of Population 3, and the second-stage sampling unit was a pupil.

The First-stage Sampling. The classification of schools (courses in the case of Population 3) and total numbers of pupils enrolled were as shown in Tables Ia and Ib.

Separate procedures of stratification were used for each of the 17 categories of schools or courses. The number of strata in each category, the materials used for stratification, and the number of sample pupils allocated to each category are shown in Table II. Each category was stratified by using stratification materials in the order shown in the corresponding row of Table II, so as to increase the heterogeneity between strata and the homogeneity within strata.

For Populations 1 and 3, one school (in the case of Population 1) or one course (in the case of Population 3) was drawn at random from each stratum with a probability proportional to the enrollment of the school or course.

For Population 2, the population was restricted to those included in categories 2 and 3 of Table Ia, and the sample schools were selected alternately from those of Population 1, resulting in 100 schools and 978 pupils.

TABLE Ia

Number of Schools and their Total Enrollment in 1962

Population 1 Types of lower secondary school	Number of schools	Total enrollment
1. National schools	79	35,932
2. Public schools not in Hokkaido	10,454	6,589,839
3. Public schools in Hokkaido	1,326	412,382
4. Public schools for which data are insufficient	59	24,336
5. Private schools	535	271,583
Total	12,453	7,334,072

The Second-stage Sampling. The number of pupils allocated to each stratum, as shown in the last column of Table II, was allocated to the drawn school in proportion to the total enrollment of the school. The

TABLE Ib

Number of Courses and Total Enrollment of Grade 10

Population 3 Courses and types of upper secondary school	Number of courses	Total enrollment of grade 10
6. General course of national schools	11	2,081
7. General course of special public schools*)	71	33,704
8. General course of public schools other than those in 7	1,554	389,756
9. General course of private schools	791	233,142
10. Technical course of national and public schools	368	83,701
11. Technical course of private schools	130	39,115
12. Technical colleges	19	2,782
13. Commercial course of national and public schools	568	104,818
14. Commercial course of private schools	342	86,083
15. Agricultural course of national, public and private schools	545	64,987
16. Home-economics course of national and public schools	640	45,871
17. Home-economics course of private schools	211	28,511
Total	5,250	1,114,551

*) Category 7 is composed of those upper secondary schools, most of whose students desire to attend a few famous universities only, resulting in a rather lower rate of university entrance.

schools in which classes were organized by ability (or similar type) grouping were classified into 10 types; these schools were ordered according to the proportion of pupils who wished to attend universities or upper secondary schools, and then different types of classes were selected systematically from each type of school. In other schools, a class was selected at random. After selecting a class, all pupils in that class were classified, according to the teacher's estimate, into three ability groups, upper, medium and lower, with the proportion 1:2:1. Sample pupils were selected from each ability group proportionally and at random.

Administration. The administration of the testing was carried out successfully. While most of the sample schools agreed to participate in the survey, a few which did not agree or were unable to participate because of an accident (Niigata Earthquake on June 16th, 1964) were replaced by other schools from the same stratum and selected at random. The tests

TABLE II

Stratification of Schools and Courses

Category of schools or courses	Number of strata	Stratification materials*)	Number of samples allocated
1	1		10
2	186	1	1,865
3	14	2, 3, 4, 5, 6	117
4	1		7
5	8	7, 8, 9	77
Total for Population 1	210		2,076
6	1		10
7	12	7, 8, 9	158
8	138	10, 11, 8, 9	1,832
9	83	10, 7, 8, 9, 12	1,095
10	29	7, 9, 8, 10	394
11	10	7, 12, 8, 9	184
12	1		13
13	36	7, 10, 8, 9	492
14	31	7, 10, 12, 8, 9	404
15	22	10, 8, 9	305
16	16	8, 9	216
17	10	7, 12, 8, 9	134
Total for Population 3	389		5,237

*) *Key*

1 Value of α score (which is explained below)
2 Number of classes in a school
3 Remoteness of the school districts
4 Percentage of those who desire to go to the upper secondary schools against the total number of pupils in the same grade
5 Total score in an achievement test
6 Industrial structure of the school district
7 Ranking of the school by the two experts
8 Total enrollment of the school
9 Type of the school district
10 Sex of the school
11 Percentage of those who desire to go to college or universities against the total number of students in the same grade
12 Whether or not other courses are attached to the school.

Meaning of α score (developed by T. HAYASHI and T. SUZUKI in I.S.M.)

α is the linear combination of the five variables, (i.e. school mean Mathematics score in the 1959 nation-wide achievement test, that in the 1961 test, the total enrollment of the school in 1961, the type of district to which the school belongs, and the percentage of those who desire to go to the upper secondary schools) whose coefficients are to be determined so as to maximize the variance of α when their were administered to all the pupils in the class, but the answer sheets of pupils outside the sample were discarded during the data processing at our national center.

The answers given by the sample pupils were punched on the IBM cards. These were then divided into four sub-samples according to the code number of the sample school, and sent to the Chicago Computer Center separately.

A Follow-up Study. As mentioned earlier, the tests for Populations 2 and 3 were administered about 9 or 10 months earlier than scheduled internationally. A small scale study was carried out in order to estimate the increase in achievement scores which would have been obtained if the tests had been administered 9 months later. We took a convenient judgement sample of 9 lower secondary schools and 8 upper secondary schools from those used in the main survey. Between December 1964 and March 1965 the same tests were administered to classes with a composition similar to that of those used in the main survey. It was impossible to estimate the gains with any accuracy, but in all cases a remarkable gain was shown in the school mean. A rough estimate of the gains was at least 15–20% of the mean score for Population 2 and about 10% for Population 3.

Some Features of Japanese Students' Achievement

The Total Score

Distributions of the total scores of Japanese students are very similar at all levels, compared with those of the national achievement test conducted in Japan by the Ministry of Education in 1963 as well as those of other countries in the IEA study. Those distributions are shown in Figures I–IV (pp. 169–172) in the form of frequency polygons. The shapes of the polygons for Population 2 in the IEA Test and for grades 2 and 3 in the national achievement tests are very similar, i.e. skewed and J-shaped, while those for Populations 1b, 3a and 3b are similar, being plateau-shaped or platykurtic. In the national achievement test, all the test items were concerned with those content areas taught in the previous grade or lower, and not including anything in the upper grades (i.e. not

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square sum is constant. Schools were arranged according to the order of values of α, computed by the data available in May 1962, and divided into 186 strata so that each stratum should contain approximately the same number of pupils.

Further details of α and the sampling errors are given in the article Tatsuzo Suzuki: "The Sample Design for the Survey of the International Project for the Evaluation of Educational Achievement in Japan." *Annals of the Institute of Statistical Mathematics*, Supplement IV, 1966, pp. 65–77.

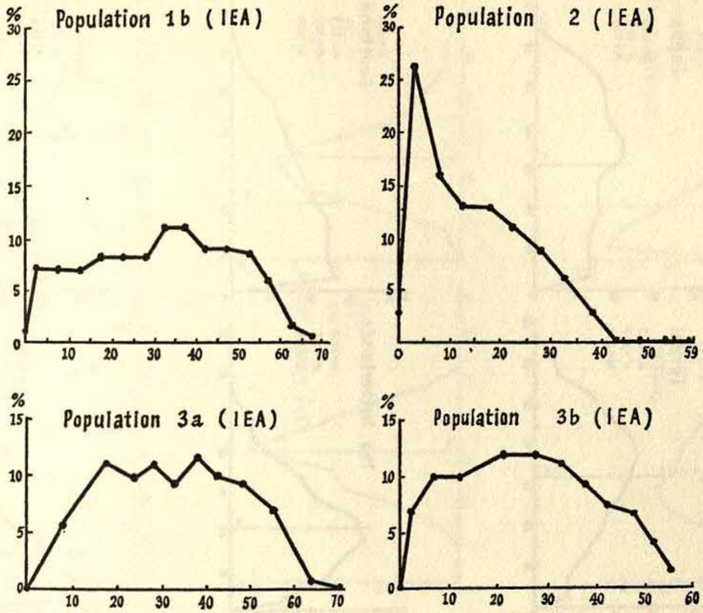
yet taught), and the percentages of students who answered each item correctly (hereafter this percentage will be referred to as the percentage of correct answers to the item) ranged approximately from 10% to 70%. The test items in the IEA study were broader, and included items concerning those content areas taught in the elementary school, as well as some which had never been taught in school, and the percentages of correct answers ranged more widely, from 10% or less to 90% or more. This fact might be regarded as the reason for the difference in shapes of the frequency polygons in IEA and in the national achievement test. The broader the range of content and item difficulties, the broader the range of the total score. The frequency polygons of all the participating countries at all levels, as shown in the Figures II–IV, might be classified into several categories, according to whether mono-modal or not, and whether its mode is more than, equal to, or less than its mean value. From this classification it becomes clear that the frequency polygons of Japanese students in Populations 1b, 3a, and 3b are all plateau-shaped not having a smaller number of lower achievers than higher ones. The same tendency is scarcely found in other countries, except in England for Populations 1b and 3a. Japan is the only country which has a uniform curriculum for all students in Populations 1b and 3a. It seems natural to expect that scores in a country which has several curricula for a given population would show a multi-modal distribution, and scores of a country with a uniform curriculum well suited to the population would show a mono-modal distribution. In actual fact, the polygons of the countries with low retentivity approach the mono-modal in the upper levels, where the populations are composed of more homogeneous students than those of the lower levels. From these considerations, the peculiar form of the Japanese distribution might be interpreted as an indication that the lower and upper secondary schools in Japan admit heterogeneous students with a broader range of ability, especially into Populations 3a and 3b.

Item Analysis

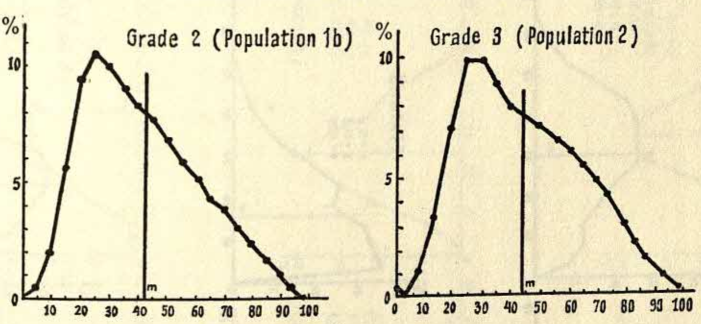
Classification of Items. As it would have been too tedious to examine students' responses to all the test items, those items which show some specific characteristics in the students' responses were selected as follows. Firstly, each item was classified into "easier in Japan." "harder in Japan," and "medium," by using the international result.1) Secondly, items were classified into two groups according to whether or not students had had some opportunity to study these content areas, on the basis of the grade-placement of subjects in the national course of study. To estimate the degree of students' success or failure on each item, the following values

FIGURE I

Distributions of Test Score in Japan



Nation-wide Mathematics Achievement Test of the Lower Secondary School in 1963



of p were computed for each item instead of using the raw percentage of correct answers. This served to minimize the effect of guessing.

$p \times 100$ = the percentage of correct answers – the percentage of students who select the second most popular alternative. From the group of items whose content areas students had not had the opportunity to study in their school learning, the items with $p \geq .10$ were selected. This group will be referred to below as group A. From the group of items whose content areas students had had some opportunity to study in their school

FIGURE II

Distributions of IEA Test Score Population 1b

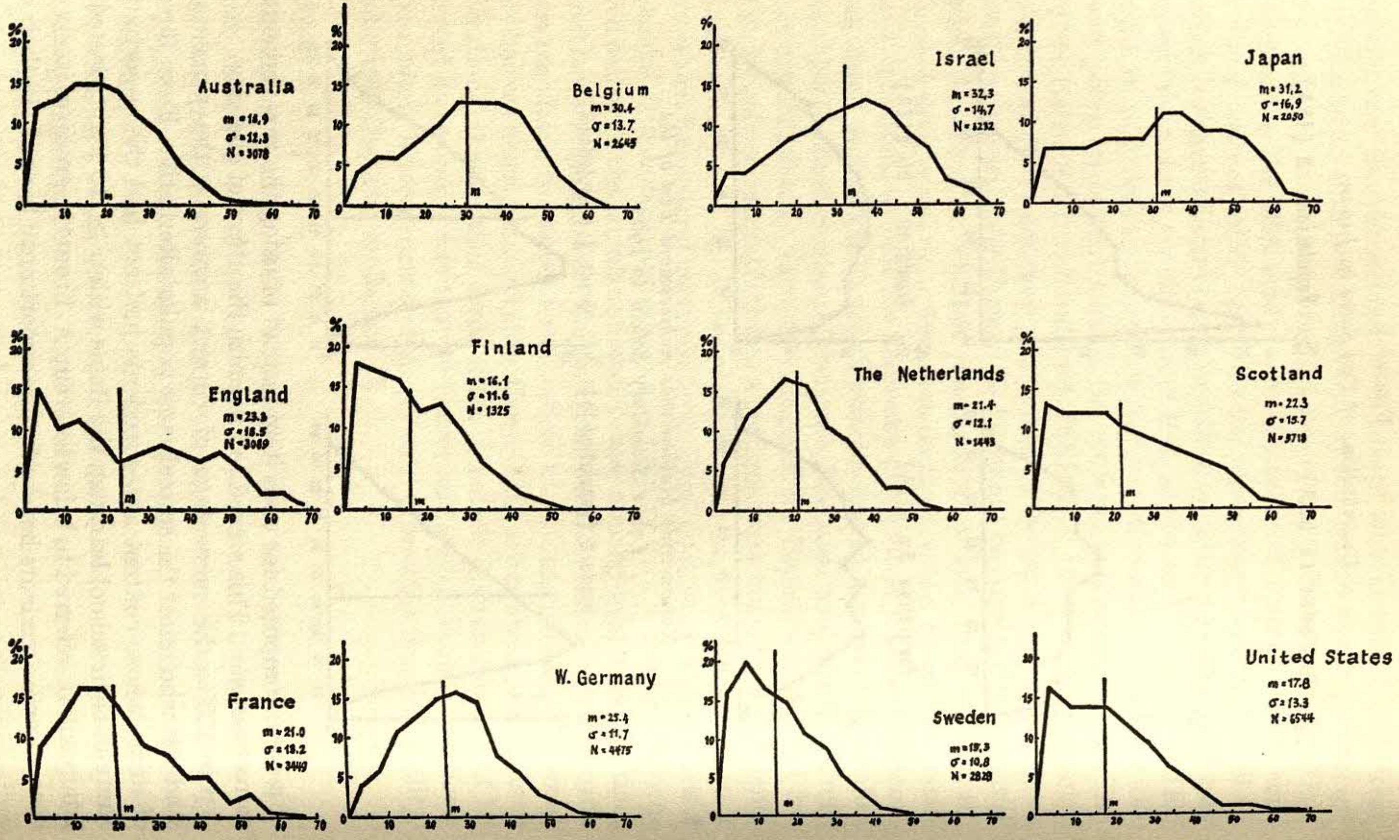


FIGURE III

Distributions of IEA Test Score Population 3a

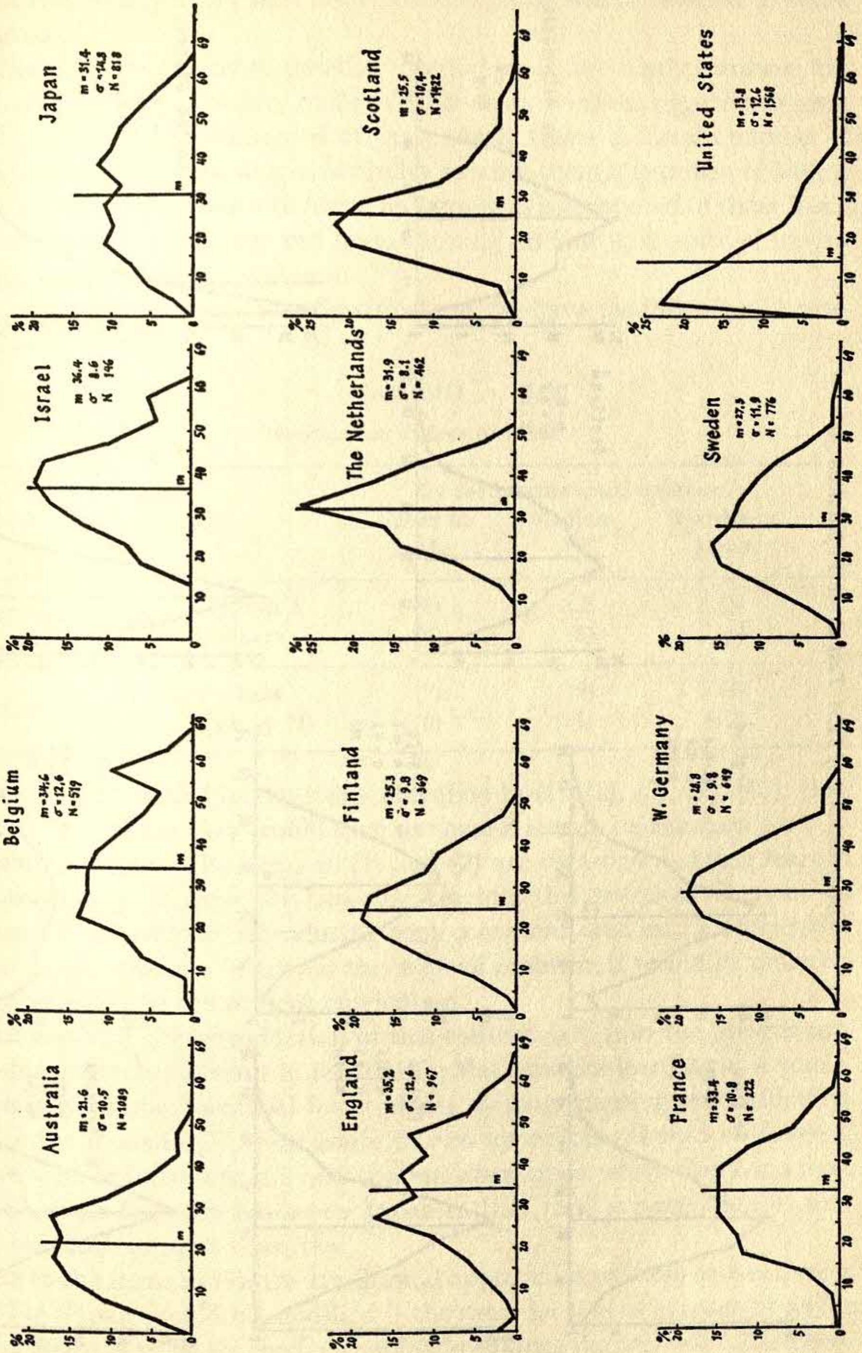
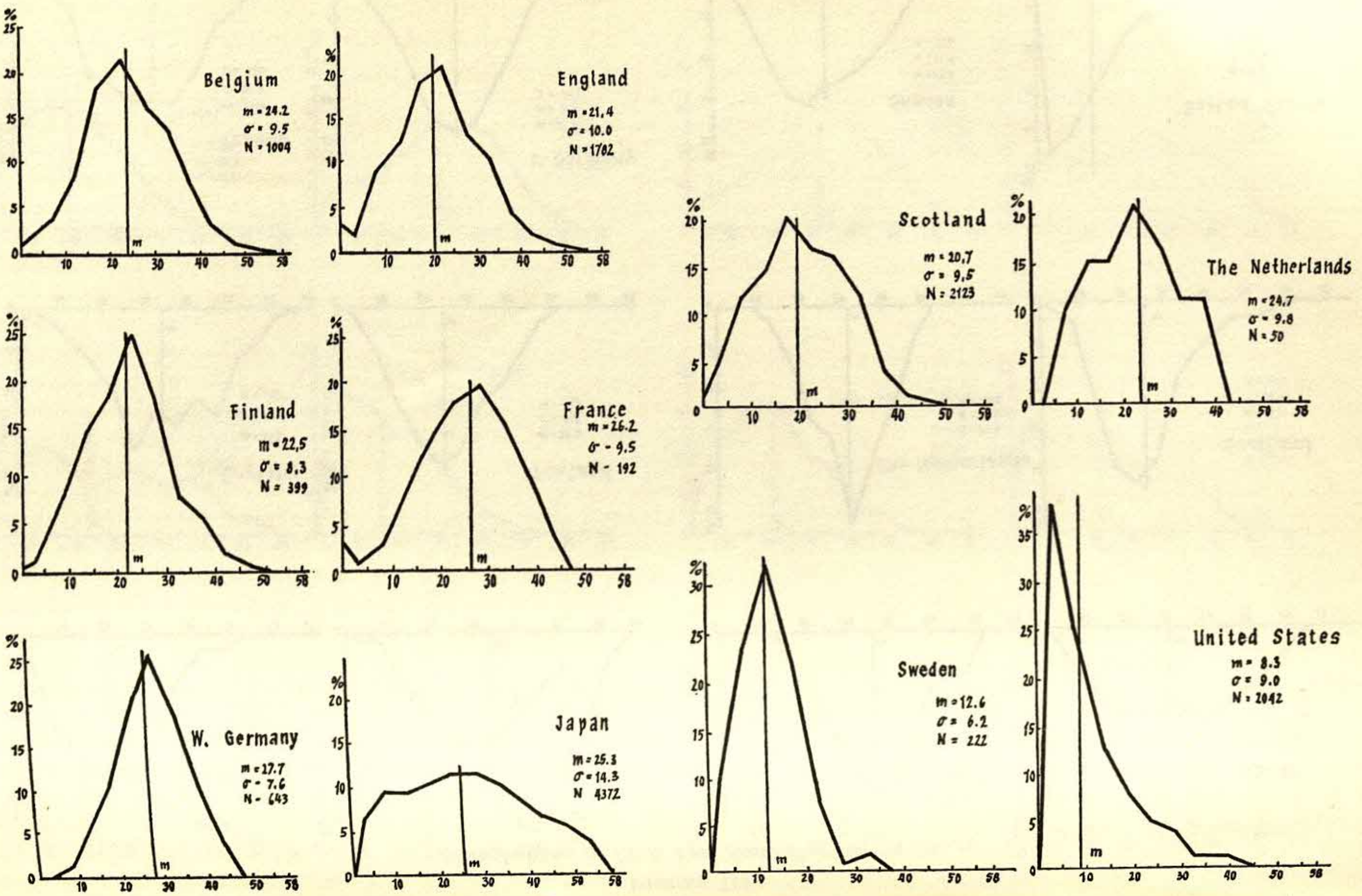


FIGURE IV

Distributions of IEA Test Score Population 3b



the items with $p < .10$ were selected. This group will be referred to below as group B.

Thus, where the most popular alternative is the correct answer, the value of p will be positive, while in other cases p will be negative or zero.

Thus, group A is composed of those items, where a certain number of students showed some degree of ability to solve them, regardless of having not had any opportunity to learn, and group B is composed of those items where many students showed some learning difficulty, in spite of having had some opportunity to learn.

Combining the above two classifications, we have the following 12 categories of items:

TABLE III

Classification Frame of Items

Learning opportunity		by the international criterion Easier in Japan	Medium	Harder in Japan
Not having had	group A	(1)	(2)	(3)
	others	(4)	(5)	(6)
Having had	others	(7)	(8)	(9)
	group B	(10)	(11)	(12)

We are interested in the items classified in (1), (2), (3), (9), (10), (11), and (12), because they would give us some relevant information for curriculum revision. The items in (1) and (2) are regarded as being learned unconsciously without any specific teaching by practices common in Japan. If the aims of introducing such a content area into a curriculum is to enable students to answer this type of problem, it would be unnecessary to add it to the present curriculum.

However, if the introduction of this content area into the present curriculum is likely to result in facilitating Mathematics learning as a whole, then it would be beneficial for students, without causing any difficulty. As to the items in (3), some cautious new approaches should be devised, if we wish to introduce the new content areas upon which the items were based, since they are harder in Japan in that they are regarded as new mathematics in most countries.

As to the items in (9), the traditional approaches to these content areas used in Japan should be modified if the same level of achievement as for other items is to be reached. Generally speaking, the increase in achievement seems to be possible in this case.

The results on the items in (10) are not so good as they appear in the light of the international criterion, since the value of p indicates that a comparable number of students who succeeded might be suspected of being confused. This would mean that some kind of revision in approach is needed. The items in (11) are regarded as difficult not only in Japan but in most countries. Reconsideration not only of approach but also of grade-placement of the topics will be needed. The interpretation of the items in (12) is the same as that of the items in (9), and the necessity for modification greater.

Of course, the above considerations are of a general nature and the actual interpretation must be made by applying these to the actual structure of the items, with some modification if necessary. The result of classification in each Population is as follows:

Population 1b

(1) *) A–19**)
(2) B–21, C–9**), C–19, C–23
(3) C–15
(9) A–1, A–18, B–5, B–24, C–1
(10) A–10
(11) A–14, A–22, C–16
(12) None

Population 3b

(1) 3–14 (C–17)
(2) 3–19 (B–21), 3–20 (C–19)
(3) None
(9) 3–4 (A–18), 5–3, 5–6, 5–21
(10) 5–19**), 5–20, 6–10
(11) 3–11 (A–21), 5–5
(12) 5–2, 6–8

Population 3a

(1) 7–10
(2) 5–17, 7–7, 7–8, 7–12, 7–13, 8–3**), 8–5, 8–8, 9–8**), 9–10**), 9–13, 9–14**)
(3) 8–6, 8–7, 8–15, 9–3**), 9–5**)
(9) 5–2, 5–3, 5–6, 5–10, 7–4, 7–5
(10) None
(11) 8–11

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*) ( ) indicates the number of category in Table III.

**) Content areas taught in the 2nd grade of the lower secondary school, which is the grade of this population.

Interpretation of Population 1b Items. A–19 is concerned with similarity in Geometry, which is a content area of the 2nd grade, and some students may learn it before the day of testing. The same may apply for item C–9, which is concerned with simultaneous linear equations. The results of these items seem to justify the present placement of these topics.

B–21 is concerned with the binary number system, but mis-formulated, because the correct alternative could be chosen without any knowledge of the binary system, if students regard the given numbers as ordinary decimal ones. Therefore it would be safe to ignore this response.

C–19 is concerned with the concept of sets. There are some other set problems (A–18 and C–17), which also do not seem to be so difficult. Introducing the concept and notation of sets into the curriculum might be possible without causing serious difficulty. But the introduction of some concepts of the affine transformation would require a carefully designed approach, because C–13, 14, and 15 as a whole show some difficulty. (Even though C–13 is classified in (3), this result should be reduced in the interpretation, since this item has only three alternatives).

C–23 is concerned with inequality in fractions. This result is regarded as indicating the possibility of introducing inequality in the lower secondary school.

On the other hand, the results of the items A–14, A–22, C–1, and C–16 indicate that Japanese students have some difficulties in understanding the meaning of zero and place value, and the use of variable in expressing relations of the ratio concept. If a more suitable approach is adopted, it would be possible to increase the percentage of correct answers to A–1, B–5, and B–22.

Interpretation of Population 3b Items. Introducing the concept and notation of set to this population seems to be possible, judging by the results of items 3–14 in (1) and 3–20 in (2). In fact, these were introduced into the upper secondary Mathematics curriculum to the new students in 1963.

The item 3–19 (same as B–21 in population 1b) should be omitted in the interpretation for the reason already mentioned.

The item 5–3 in (9) is concerned with the meaning of the root of an equation, and is one of a series of questions 5–2 in (12), 5–4, 5–5 in (11). The classification of these items indicates a strong possibility that more emphasis was put on the mechanical side than on the significance of solving equations.

The items 5–6 in (9), 5–19 in (10), and 6–10 in (10) are concerned with the concept of function, which is much emphasised in our curriculum, and the item 5–20 in (10) is also of the same nature, though some students in this population might not learn it. The results indicate the need for some reconsideration of approach.

As to the items 3–11 in (11), which is the same as A–21 for Population 1b, the comparison of distribution of responses to each alternative between 1b and 3b is very interesting. This is as follows:

Alternatives	1b	3b
A	11.3%	15.1%
B	22.8%	8.2%
C	15.4%	6.0%
D	30.8%	38.5% (correct answer)
E	17.0%	31.0%

In Population 1b, incorrect responses are almost equally distributed among four alternatives, while in Population 3b, where pupils have already learned quite a lot about demonstration in Geometry, the incorrect responses are concentrated on the alternative E, "None of them". The items 6–8 in (12) is also concerned with demonstration in Geometry. The normal practice in teaching demonstration in Geometry would seem to need some modification in approach.

Interpretation of Population 3a Items. The items 7–10 in (1) and 7–7 in (20) are concerned with the broader concept of function and relation based on the set concept, and the items 5–17 in (2), 7–12 in (2), 7–13 in (20), 8–5 in (2), and 8–8 in (2) all concern the broader concept of operations. The results of these items indicate that these new Mathematics content areas could be learned as easily as the traditional content areas, if introduced with an appropriate approach. The same kind of consideration may be applicable to the results of the items 7–8 and 9–13 both in (2), which concern the vector concept, if we ignore the effect of learning vectors in Physics or Applied Mathematics.

In Population 3a, some students often advance their Mathematics learning faster than scheduled by the course of study. The results of the items 8–3, 9–8, 9–10, and 9–14 all in (2) are considered to be due to this fact.

The items 8–7 in (3), which concern the new operation defined axiomatically, indicates that some caution is needed in introducing it.

The items 8–6 and 8–15 both in (3) are also concerned with what the students, with the exception of a few students in vocational courses, had not had any opportunity to learn, i.e. determinant and arc sine. The result indicates that it would be possible to introduce these content areas using a well designed approach.

On the other hand, the results of the items 5–2 and 5–3 both in (9) indicate that the same interpretation mentioned for Population 3b applies also for Population 3a. This seems to reflect a general tendency among Japanese students.

As to the items 5–6, 5–10, and 7–4 all in (9), the values of p here are not as small as for other items. The internationally high achievement on these items seems to be the reason for such a classification. The result on the items 7–5 is unexpectedly low. Some remedial measure should be taken. As to the items 8–11 in (11), the result may be interpreted as reflecting some ambiguity in the translation into Japanese of the term "decreasing."

Affective Measures

The Japanese course of study for Mathematics prescribes the following objectives of teaching Mathematics:

1) Originality based on a deeper understanding of basic Mathematical concepts, principles, etc.
2) Accurate and efficient use of basic knowledge and skills in Mathematics.
3) Appreciation of and ability to use Mathematics as a scientific language.
4) Ability and aptitude to formulate problems with Mathematical approaches, to solve them with insight, and to think logically.
5) Appreciation of the place of Mathematics in human life, science and technology, and ability to utilize Mathematics positively.

Most of the affective objectives (attitude scales) surveyed by the student's opionnaire in this project are regarded as another form of expressing the same philosophy as the above. Particularly the attitude

TABLE IV

Means (M) and Standard Deviation (SD) in the Attitude Scale and Interest Score

		Populations			
		1b	2	3a	3b
1. Interest	M	6.1	5.7	6.3	5.2
	SD	1.6	1.8	2.2	2.0
2. Attitude toward Mathematics as a process	M	6.2	6.2	5.8	6.2
	SD	1.8	1.9	1.8	1.8
3. Attitude to the difficulties of learning Mathematics	M	8.4	8.4	8.5	8.6
	SD	1.5	1.4	1.5	1.5
4. Attitude toward the place of Mathematics in society	M	9.5	8.8	9.6	9.6
	SD	2.0	2.0	2.0	2.2
5. Attitude toward school and school learning	M	10.5	10.5	10.6	11.4
	SD	1.8	1.9	2.0	2.0
6. Attitude toward man and his environment	M	9.4	9.4	9.0	9.2
	SD	2.0	2.1	1.9	2.0

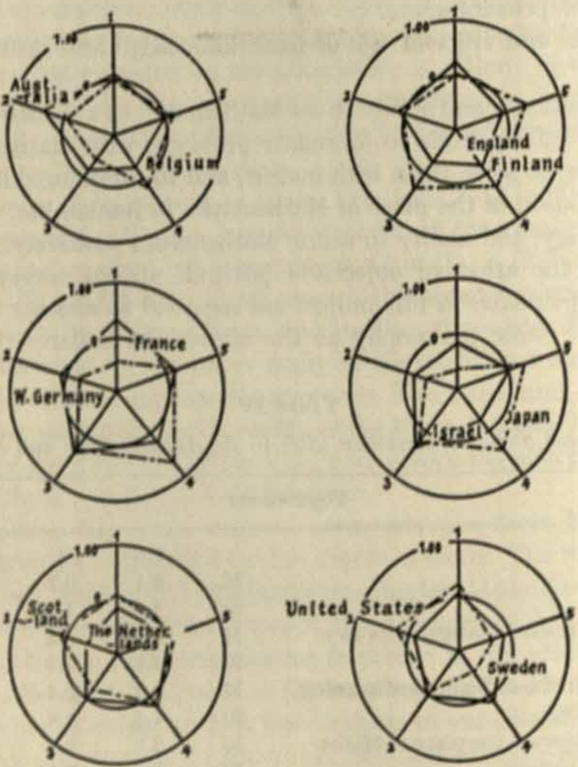
toward Mathematics as a process corresponds to the objective 1) and the attitude toward the place of Mathematics in society corresponds to the objectives 3) and 5). Furthermore, the interest scores would be regarded as a measure of a certain aspect of the above objectives.

The means and standard deviations of Japanese students in the five attitude scales and interest score are as shown in Table IV.

If Mathematics were taught successfully according to the prescribed objectives, the more pupils learn about Mathematics, the higher the attitude and interest scores would be. If the amounts of learning are arranged in the order of Populations 1b, 2, 3b, 3a, would the arrangement of mean

FIGURE V

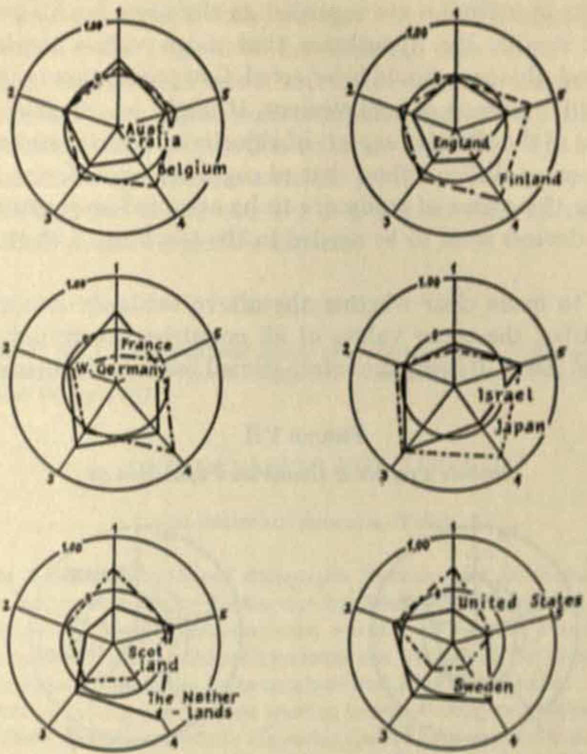
Attitude Profiles of Countries Population 1b



1. Attitude toward mathematics as a process
2. Attitude to the difficulties of learning mathematics
3. Attitude toward the place of mathematics in society
4. Attitude toward school and school learning
5. Attitude toward man and his environment

FIGURE VI

Attitude Profiles of Countries Population 3a



values in Table IV also be as the above? This question can be answered by testing the differences in means. The results are as follows:*)

1) Interest $3b < 2 < 1b \doteq 3a$
2) Mathematics as a process $3a < 1b = 2 = 3b$
3) Difficulties of Mathematics $1b = 2 \doteq 3a \doteq 3b$ $(2 < 3b)$
4) Importance to society $2 < 1b \doteq 3a = 3b$
5) School and school learning $1b = 2 \doteq 3a < 3b$
6) Man and environment $3a \doteq 3b \doteq 2 = 1b$
$(3a < 2, 3a < 1b, 3b < 1b)$

Interest in Mathematics appears to decrease as the level advances, except for Population 3a, where it is about the same as at the starting point of Population 1b. The attitude toward Mathematics as a process is the least at Population 3a, and remains constant for other populations. Other aspects of attitudes are regarded as the same for all populations. From these results, the hypotheses that mean values would increase when the level advances should be rejected. Comparing these with progress in the cognitive aspects of achievement, it might be concluded that the development of the affective aspects of objectives in Mathematics teaching seems to be more difficult than that of cognitive ones. If the prescribed objectives in the course of study are to be accepted as reasonable, more efforts and devices seem to be needed in the teaching of Mathematics in Japan.

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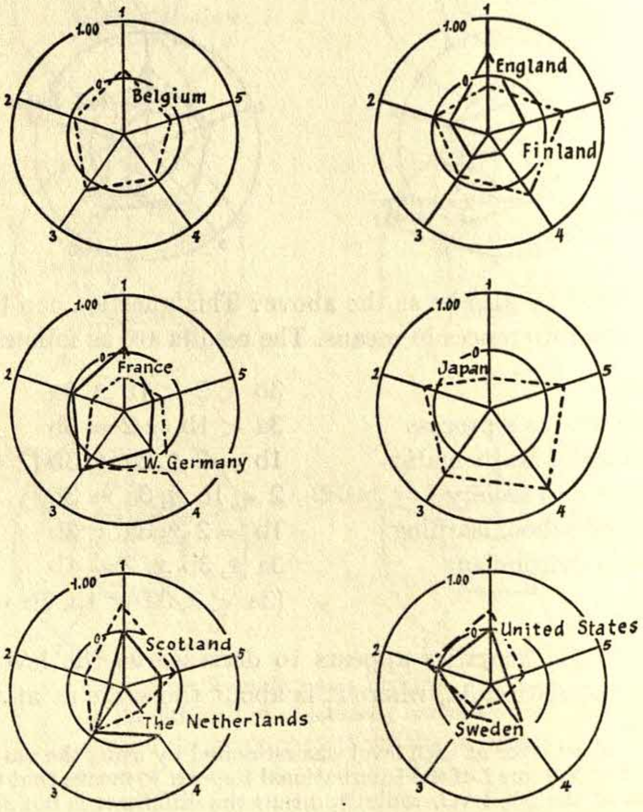
*) The standard error at each level was estimated by using the value of C in the Table 9.2–9.6 of Volume I of the International Report. $<$ means that the difference is significant at the 5% level, while $\doteq$ means the difference is not significant.

In order to make clear whether the above tendency is applicable to other countries, the mean values of all countries are transformed into standardized scores, 0 being the international mean and 1 being the inter-

FIGURE VII

Attitude Profiles of Countries Population 3b



national standard deviation, and drawn in the diagrams as shown in Figures V–VII (pp. 178–180). In the diagrams, five radii 1, 2, 3, 4 and 5 represent the five attitude scales respectively with a small circle representing value 0 and a large circle representing value + 1.

From these diagrams, it seems to be true that the shapes of the diagrams for the different populations in a particular country are more alike than those of the same population in other countries. This might be interpreted as meaning that the attitude profile of a country reflects the traditional character of the country and is more difficult to change by education than are the cognitive aspects.

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DATENANALYSE FÜR JAPAN

von Shigeru Shimada, Tokio

Der Autor beschränkt sich auf diejenigen Bereiche der im Rahmen der *IEA*-Mathematik-Untersuchung für Japan durchgeführten Datenanalyse, die nicht in den internationalen Bericht aufgenommen wurden. Es handelt sich dabei um die Art der Stichprobenbildung, einige Grundzüge der Verteilung der Gesamtwerte für verschiedene Populationen, die Datenanalyse und Attitüden-Skalen.

Für die Stratifizierung der Schulen wurden bereits vorliegende statistische Daten verwendet. Für Population 1 wurde Hayashis Quantifizierungsmethode angewandt. Aus jedem Stratum wurden Schulen, Klassen und Schüler in Zufallsstichproben zusammengestellt, abwechselnd von Schulen und Klassen.

Die Verteilungspolygone der Gesamtwerte der Leistungen japanischer Schüler weisen bis auf Population 2 für alle Populationen Plateau-Gestalt auf. Dies ist ein charakteristisches Merkmal für die Leistungen japanischer Schüler und mag aus der Tatsache herrühren, daß es in Japan bei Schülern der gleichen Schulstufe trotz einheitlichem Lehrplan eine breite Leistungsstreuung gibt.

Die Schülerantworten zu jeder Testaufgabe wurden unter Anwendung der internationalen Kriterien analysiert. Die Antworten zu einigen Items, die von den meisten Schülern im Unterricht nicht behandelt worden waren, sprechen für die Möglichkeit der Einführung von Begriffen der neuen Mathematik, z.B. des Mengenbegriffes in den neuen Lehrplan, der z.Zt. ausgearbeitet wird. Gleichzeitig weisen Antworten zu anderen Items auf die Notwendigkeit hin, für einige im gegenwärtigen Lehrplan bereits enthaltene Lernbereiche neue methodische Ansätze zu finden.

Die Werte der für die Untersuchung verwendeten Attitüden-Skalen können im Hinblick auf die im japanischen Lehrplan vorgesehenen affektiven Lernziele als Maßstab für die Leistungen angesehen werden. Das Ergebnis des Überblicks über die Leistungen verschiedener Populationen zeigt keinerlei Ansteigen der entsprechenden Werte in den höheren Klassen. Diese Tatsache scheint dafür zu sprechen, daß

sich affektive Lernziele schwerer als kognitive Lernziele erreichen lassen. Die gleiche Tendenz wurde in den meisten beteiligten Ländern festgestellt, als man die Attitüden-Profile in Form von Diagrammen graphisch darstellte und verglich.

ANALYSE NATIONALE DU JAPON

par SHIGERU SHIMADA, Tokio

L'auteur concentre son attention sur les points de l'analyse nationale japonaise de l'étude en mathématique entreprise par l'*IEA* qui ne sont pas compris dans le rapport international. Ce sont des méthodes d'échantillonnage, quelques caractéristiques sur la distribution des résultats totaux pour les différentes populations, l'analyse des points et les échelles d'attitude.

La classification des écoles par niveaux fut opérée en employant différentes données de statistiques dont on disposait déjà. Tout d'abord, pour la population 1, on utilisa la méthode de la quantification de Hayashi. Les écoles, les classes et les élèves furent choisis au hasard, à tour de rôle et à partir de chaque couche, école et classe.

Pour les élèves japonais, la distribution des résultats totaux se fait sous forme de plateaux pour toutes les populations, excepté pour la population 2. Ceci est une des caractéristiques des résultats obtenus par les élèves japonais, et peut être considéré comme le fait qu'au Japon, il y a toute une gamme de résultats acquis par les élèves au même niveau scolaire, bien qu'ils aient un programme d'étude uniforme.

Les réponses à chaque item données par les élèves furent analysées en utilisant des critères internationaux. Les réponses à certains items que la plupart des élèves n'avaient pas eu l'occasion d'apprendre, indiquent la possibilité d'introduire dans le nouveau programme d'étude en voie de préparation, des concepts de la mathématique moderne, comme par exemple: la notion des ensembles. En même temps, les résultats d'autres items montrent la nécessité d'imaginer de nouvelles méthodes pour certains contenus qui sont déjà compris dans le programme d'étude actuel.

Dans cette étude les résultats relatifs aux échelles d'attitude peuvent être considérés comme une mesure des résultats dans les objectifs affectifs, déterminés dans le cours d'étude national au Japon. Le résultat d'une étude relative aux différentes populations n'a pas enregistré une augmentation parallèle dans le rendement et le niveau. On pourrait interpréter ce résultat de la façon suivante: il est plus difficile de développer l'aspect affectif des objectifs que l'aspect cognitif. La même tendance s'est manifestée dans la plupart des pays participants en traçant les profils d'attitude dans les diagrammes et en les comparant.

NATIONAL ANALYSIS: THE NETHERLANDS

by SIES WIEGERSMA, Amsterdam

Outline of Dutch System of Education

In the Netherlands we were interested to find out in how far the materials from the mathematics study could throw light upon several problems. One was the degree of social selectivity of our system of secondary education, i.e. to what degree children from lower socio-economic classes are prevented from entering pre-university education, given a certain level of performance in primary education.

Another one was to find out the overlap in ability in pupils of different types of school within the secondary school system. Thirdly we were interested to get a more quantitative insight into the well known phenomenon that boys perform better than girls in mathematics.

These questions were mainly pertinent to children that had just left primary education – Populations 1a and 1b. A number of other questions arose with regard to the pupils who were about to finish pre-university education. These will be presented later.

For the reader who is not acquainted with the Dutch system of secondary education a brief outline is presented. Children enter secondary education after six years of primary education, usually at the age of 12 or 13. They then have to choose between a large number of types of schools that can, however, be reduced to four main categories:

1. Schools preparing for university entrance. They will hereafter be called "grammar schools," although, of course, they differ in several respects from the British grammar schools.
2. Schools giving an academic education aiming at a level that is comparable to the British GCE "O" (ordinary) level. Pupils from these schools mainly go on to the vocational training colleges (technical, nautical, agricultural, commercial, teacher training, etc.) or enter white-collar jobs. Using a Dutch abbreviation, they will be designated as "*Ulo*-schools."
3. Schools giving a combination of general education and pre-vocational training. The main types within this category are the technical schools for boys and domestic education schools for girls. Pupils from these schools mainly go on to skilled jobs through an apprenticeship system or take additional education in order to enter technical colleges. Girls frequently enter sales or simple office jobs. As these two types of school usually are non-coeducational and have very different aims in teaching mathematics, they shall have to be distinguished in our analysis.

4. Schools with a programme comparable to that of the lower streams of English secondary modern schools. Usually they are visited by pupils who are not sufficiently motivated or gifted to visit schools with higher requirements but who have to stay on in school until they reach the age where compulsory education ends. Mostly these pupils go on to semi-skilled or unskilled jobs in factory work or to very simple occupations in the sales and office sector. This category will be named "extended elementary education."

The Dutch educational system, both primary and secondary, is extremely selective and class (grade) repetition occurs frequently. For this reason there is a comparatively wide range of grades over which pupils of a given age are distributed. Within the framework of the IEA project this meant that there was no level where over 50 percent of the 13-years-old pupils could be found. It was decided to take as the 1b population both the first year of secondary education and the last (sixth) year of primary education. At the time of testing slightly less than 50 percent of the 13-year-olds were in the first year of secondary education and over 20 percent were in the sixth year of primary education. (The remainder are mainly to be found in the second year of secondary education – most of them were near their 14th birthday – but there is also a sizeable group still in the fifth year of primary education and minor groups in special education or at other levels in the educational system).

Whereas, at the time of testing, this wide range provided many complications, afterwards it also had some advantages because it permitted us to study some problems that otherwise would have been inaccessible. It should be pointed out that all data used in the analyses presented were obtained from Population 1b, i.e. from a grade and not from an age group.

Social Selectivity

It has long been suspected that the Dutch educational system has a high degree of social selectivity, because only a comparatively small percentage of the grammar school pupils and university students come from lower socio-economic level homes. However, a quantitative insight into this problem is difficult to obtain as there are also differences in ability and in achievement in elementary education to be observed between pupils coming from different socio-economic levels. Until very recently there has been considerable opposition to using achievement tests in the schools which made it difficult to obtain reliable data on the achievement differences.

The IEA mathematics test was one of the first to be used on a national scale with representative samples. Of course, these tests give only a partial picture of school-achievement as they examine only a part of the school programme. It is intended to supplement this research by using data from the tests to be developed in the next phase of the IEA project. However, as a first approach even partial data may be useful.

The model we used was the following: it is known that about 50 percent of the boys from the highest socio-economic levels enter grammar schools after leaving elementary schools. To qualify for grammar school entrance they usually have to pass an examination set by the grammar school and sometimes also a psychological (mainly intelligence) test. Moreover, the principal of the primary school gives his opinion with regard to the ability of the pupil. This means that there is considerable pre-selection and as a first approximation one can well assume that the 50 percent of boys from highest socio-economic levels who enter grammar schools, will represent also the 50 percent most gifted – in terms of school performance – within their groups.1)

As data had been collected on the socio-economic background it was possible to differentiate the results obtained on the mathematics test according to the occupational category of the father. The categories 1 and 2 were taken to represent the highest socio-economic group. In our sample of 577 boys tested in the sixth year of primary education 73 boys came from the highest socio-economic category families. Their median score on the combined mathematics test was found to be 30 points.

We have used this figure as a cut-off score in order to find out how many boys from other socio-economic classes have a comparable level of achievement. This will give us an estimate of the proportion of boys from different socio-economic classes that should go on to grammar schools if selection was made on the basis of educational achievement only.

It was found that there was practically no difference in average performance of boys whose families were classified in categories 1, 2 and 3. On the basis of a cut-off score of 30 points, 48 percent of these boys had a "grammar school level." All other categories had a significantly lower average level of achievement. The striking fact was that these averages were nearly always the same, varying from 23.3 to 24.9 points (median score) for all other socio-economic groups, except category 8.

This last group, consisting of children of agricultural labourers, fishermen, etc., had again a considerably lower average score of 19.8. Because of the small size of the group ($N = 26$) the difference is not significant; we decided not to include it in our analysis.

For boys from the socio-economic class levels 4 to 7 and 9 we found that 22 percent had a score of 30 points or higher on the combined mathematics test.

The frequency of the different class levels as represented in our sixth-year primary school sample combined with the data on the distribution of ability, as defined above, makes it possible to make an estimate of the composition of the first year of grammar school, should selection be made on the basis of ability or achievement only.

On the other hand from our first-year grammar school sample we can derive the composition as it actually is. Table I presents the outcome both for boys and for girls.

TABLE I

Population 1b

Percentage of Boys and Girls by Social Class

a) Scoring over 30 points on IEA tests
b) In grammar school

	Boys		Girls	
Socio-economic category	a) In ability sample	b) In actual grammar school sample	a) In ability sample	b) In actual grammar school sample
1 + 2	23	42	13	37
3	18	7	15	13
4 + 5	17	18	28	13
6	13	23	18	22
7	30	11	26	15
9	Not included because of small N in primary school sample			

With regard to the data on girls that were obtained in a way comparable to that of boys two findings are of interest with regard to the primary school pupils. The achievement of girls from category 3 was distinctly lower than that of girls from categories 1 and 2. In fact category 3 here belongs to what might be termed the middle group. Secondly girls from categories 7 or 9 homes this time had a significantly lower score than the middle group. Especially the scores of category 9 were very low; however, the small size of the sub-group makes this finding unreliable.

For girls, therefore, different from boys, we found the following groupings on the basis of median scores: a small group of girls from the socio-economic categories 1 and 2, a middle group from the categories 3 to 6 and a large group from the categories 7 to 9.

Returning to the above table we find clear evidence of social selectivity. Both boys and girls from the upper socio-economic levels are represented about 5 times more frequently than equally able children from the large group of skilled and semi-skilled workers, minor civil servants, transport-workers, etc. Despite sampling errors the size of the differences is such that the reality of the phenomenon cannot be denied.

One further remark might be made with regard to the fact that we chose as an indicator of ability a test score pertinent to one aspect of the educational programme only. The effect of this decision is that we overestimate the correlation between educational achievement in primary education and the type of school chosen in secondary education. In reality the average mathematics score of those children from category 1 or 2 homes to go to grammar school are lower than we assumed. As a consequence the composition of the first year of grammar school, if we exclude social selectivity, would shift into the direction of the frequency distribution of socio-economic classes observed in the sixth year elementary school (e.g. 73 boys from category 1 and 2 homes out of 577 male pupils represent 13 percent and 233 boys from level 7 homes represent 40 percent of the sample). It follows that our model gives an underestimation of the influence of social selectivity.

Homogeneity of Selection

Another problem in the Dutch educational system is concerned with the high percentage of grade repeaters. Each year in grammar, *Ulo* and technical schools an average of 20 percent of the pupils fails to meet the requirements for promotion. They either have to repeat the grade or change over to another type of school with a programme that better fits their abilities.

Among educators it is debated whether this high percentage of failures is due to mistakes made by individual pupils or their parents in choosing a particular type of secondary education or caused by the system as such. The former has been the traditional view and it is still held by many teachers and officials. In support of this view they usually refer to many examples, mostly of cases where the level of ability of a child is considerably below the standard required by the school.

Recently, however, many educators, without denying that in individual cases mistakes are made, are inclined to think that the main influence is due to the system as such. It has been shown that the percentage of repeaters has remained constant over a very long period – at least a century. During these years there have been changes, both in the programmes and in the participation in secondary education. It is extremely unlikely that in view of these changes the level of requirements in the programme and the level of abilities of the pupils would have remained the same. The hypothesis has been formulated that it is far more likely that schools continually adjust their standards to the average level of the pupils in such a way that with minor variations the percentage judged to be "unsatisfactory" remains the same. Some empirical evidence in support of this hypothesis [2]) has been obtained.

Of particular importance in this respect is the phenomenon of homogeneity of selection, i.e. that within a given educational group those who fail and those who succeed show very similar characteristics when judged on all relevant predictors (e.g. the differences in average level of intelligence between those who fail and those who succeed in grammar school are less than the differences between those who fail in grammar school and those who succeed in *Ulo* school). The existence of this phenomenon has only been suspected recently and if it is genuine then, of course, the prospects of reducing the percentage of failures through better guidance or better selection are not very hopeful.

The data from the IEA study offered a means of contributing to our insight into this problem. If there is little overlap between the test scores obtained by pupils of different types of schools then this fits in with the hypothesis of homogeneity of selection. A large overlap on the other hand would somewhat contradict the hypothesis.

Of course, there is a difficulty: the mathematics programmes of the different types of schools are not identical and after only two trimesters this could contribute to the differences between types of schools. However, this difficulty can be met by concentrating upon the sub-scores for arithmetic; in the grammar schools especially the mathematics programme is only concerned with algebra and geometry and also in the *Ulo* and technical schools mathematics teaching is mainly concerned with subjects other than arithmetic. In Table II the *cumulative percentage-distribution* for the "computational" sub-score is given separately for each type of school and for boys and girls. In Figure I the same data are given for the total mathematics scores – both table and graph refer to Population 1b.

The information from the computational and the total mathematics score is essentially the same. The populations belonging to the two types of academic education, grammar and *Ulo* schools, show comparatively little overlap. Approximately the first quartile of the grammar school group coincides with the third quartile of the *Ulo* school group and only about 10 percent of the grammar school pupils score below the median level of the *Ulo* group.

It would appear that the very great majority of grammar school pupils, on the basis of their achievement scores, do indeed form a rather homogeneous group within the educational system.

On the other hand the differences between the *Ulo* and technical school

TABLE II

Population 1b

Cumulative Percentage-distribution for "Computational" Sub-score in Different Types of School and by Sexes

Score	Grammar		*Ulo*		Techn.	6 Prim.		Ext.-Elem.		Domestic Ed.
	b.	g.	b.	g.	b.	b.	g.	b.	g.	g.
0– 1							1	4	2	4
2– 3						2	6	15	7	17
4– 5			1	1	2	9	16	24	21	40
6– 7			2	2	6	20	28	37	44	62
8– 9		1	6	9	17	39	47	57	67	79
10–11	2	3	14	28	33	59	69	76	82	92
12–13	6	9	33	48	54	80	85	87	94	97
14–15	17	24	55	70	70	90	94	92	99	99
16–17	27	39	71	84	87	96	96	98	100	99.7
18–19	48	60	87	94	93	99	99	100		100
20–21	66	80	95	99	99	99.5	99.7			
22–23	82	91	99	100	99.8	99.8	100			
24–25	92	96	100		100	100				
26–27	98	99.5								
28–29	100	100								

pupils are smaller. Here we find considerable overlap. At least with regard to requirements concerning initial achievement in mathematics these two types of schools are comparable. (There may be however – and probably are – considerable differences with regard to verbal achievement!)

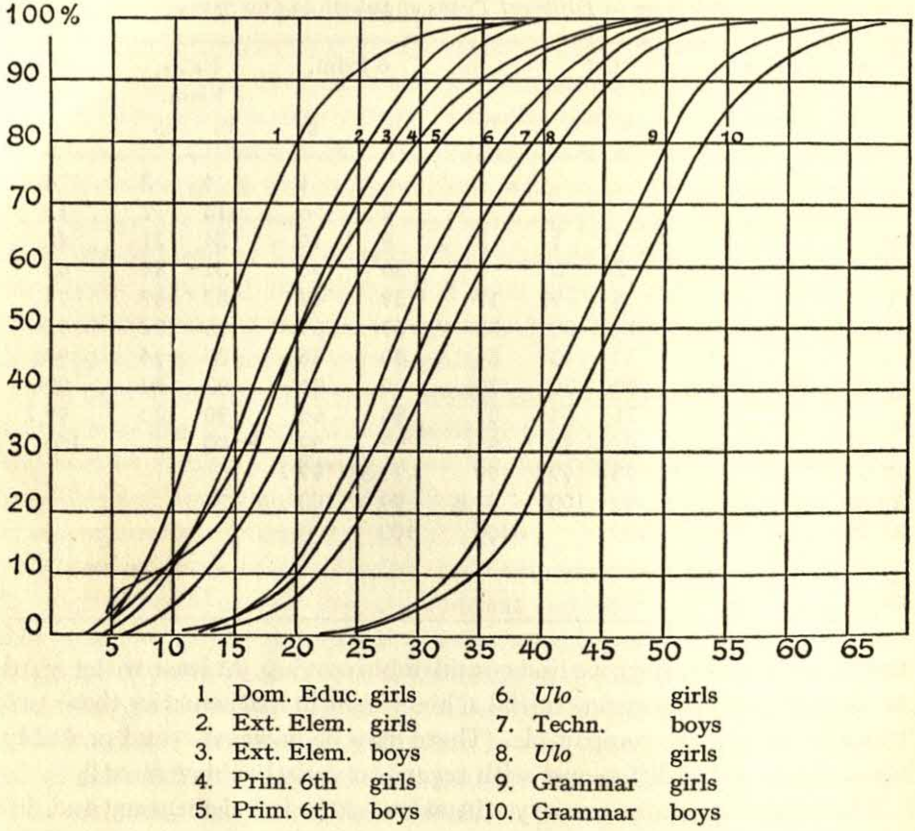
The other types of secondary education, extended elementary and domestic education, show a much lower level, both on the total and the computational scores. Arithmetic is the only mathematical subject taught in these schools but even in this field the average pupil is less able than the average pupil from the sixth grade of a primary school. There are notable exceptions, however, and in The Netherlands, as in other countries some pupils from these or similar schools had good scores also on the algebra and geometry sub-scores.

On the whole one can say that the data from the IEA study support the view that in the field of academic secondary education the large percentage of grade repeaters is not primarily due to faulty selection or unrealistic ambitions. As approximately 50 percent of all students go either to a grammar or an *Ulo*-school after leaving primary education, this is an important finding.

The data presented above also throw some light upon an old question:

FIGURE I

Total Mathematics Scores: Cumulative Percentages Separately for Types of School and Sexes



are boys better in mathematics than girls? Within the same type of school boys always have better average scores than girls, both in arithmetic and on the total test. The differences, however, are much smaller than is usually assumed. There is a very considerable overlap and it is also clear that the type of school is a much more important influence than sex with regard to the score distribution. One might say that sex differences with respect to mathematics achievement are often unduly emphasised because comparisons are usually made within one type of school where there is considerable homogeneity of selection.

The Pre-university Year

Most of the questions we studied with regard to Populations 3a and 3b are so intrinsically interwoven with the details of the structure of the

Dutch educational system that little purpose is served by presenting them all here. Two findings, however, may be of wider interest.

Within the Dutch grammar school system there are two main variants: the "gymnasium" with Latin and Greek as compulsory subjects and the "*h.b.s.*" 3) without classical languages. Both have a branch with mathematics (and sciences) as a major subject and a language branch.

The gymnasium is attended by approximately 25 percent of grammar-school pupils. It is usually considered to be an elite school with a higher intellectual level than the *h.b.s.* which is attended by the other 75 percent.

On studying the achievement of pupils in the mathematics branches of the two schools we found that the gymnasium pupils on the average scored higher. On the total score of tests 5, 7, 8 and 9 the best 10 percent of the *h.b.s.* group equalled the best 20 percent of the gymnasium group. Similarly 20 percent of the *h.b.s.* group reached a level that was reached by over 30 percent of the gymnasium group and the top 30 percent of the *h.b.s.* group was on a par with 45 percent of the gymnasium pupils.

These differences are not caused by differences in programme because all these students have to take the same final examination in mathematics, which at the time of our testing was only a few months away.

If, however, one takes into account that there are about three times as many *h.b.s.* pupils as there are gymnasium students – both in the mathematics branches and in the schools in their entirety – then it follows that the somewhat less exclusive type of school has at all levels the majority of the high achievement students. In a way this confirms the finding of the international study that exclusiveness is not the most efficient way to develop national intellectual potentials.

No sex differences in the test scores were found at this level.

With regard to the other students, those who had chosen the language branch, another question arose. The division into a mathematics-sciences and a language branch takes place two years before the final examinations. Until that time all students within a given type of grammar school study the same basic programme, which includes a considerable amount of mathematics.

Test 5 is a good measure with which to study the effects of this basic teaching because its content is essentially the subject matter that all students both at gymnasium and h.b.s. are taught. Yet we found that over 80 percent of the non-mathematics students had a score on this test below that of the first quartile of the mathematics group and 95 percent scored below the median of the mathematics group. In isolated cases, however, non-mathematics students obtained scores that compared well with those of the best students from the mathematics group.

This result is, of course, not surprising, although, it reflects badly upon the efficiency of a system that forces the student to devote several years to the study of a subject for which he has little aptitude.

The question now arises, however, as to how much knowledge of at least very elementary mathematics is retained. This question is not without practical importance. A large number of students of the language branch, when they go to university, choose as their main subject one of the behavioural, social or political sciences. One or more courses in statistics are then a necessary part of the programme and in the teaching of statistics a certain facility in dealing with elementary mathematical concepts is usually presupposed. A student who lacks this will have great difficulty in passing his examinations or may even fail.

A good operational definition of the requirements for a facility in handling elementary mathematical concepts is still lacking. Tentatively we assumed that the ability required would be at least equal to that of a first-year grammar school pupil whose score is at the third quartile level.

Test 3 offered an opportunity to compare the pre-university non-mathematics group (3b) with the first-year grammar school group (1b). We found that on average the pre-university group scored 4 points higher than the first-year group. However, the overlap between the distributions was considerable. Approximately 40 percent of the *h.b.s.* and 25 percent of the gymnasium students from the 3b population obtained scores below the third quartile of the first-year group. Moreover, 20 percent of the *h.b.s.* and 10 percent of the gymnasium students scored below the median of the first-year group. These data seem to be pertinent for use in counseling with regard to a choice of university study.

NOTES

1) This reasoning of course, if true for school achievement as a totality, is not necessarily true for specific parts of the programme. As will be discussed later it, therefore, gives an *underestimation* of the degree of social selectivity.

2) More specifically the hypothesis is that on a macro-statistical scale school marks are distributed: about 25 percent "good," 50 percent "average," 25 percent "unsatisfactory." The presence of the distribution has been proved empirically. Through the intercorrelation between school marks this leads to about 20 percent of pupils which fail their promotion.

3) The abbreviation *h.b.s.* stands for "*hogere burger* school" (higher school for middle-class people). It is a relict from a former educational system and will soon disappear.

DATENANALYSE FÜR DIE NIEDERLANDE

von SIES WIEGERSMA, Amsterdam

Die in den Niederlanden erhobenen Daten wurden für zwei getrennte Untersuchungen verwendet. Die eine sollte Probleme der Einstellung gegenüber Schule und Mathematikunterricht untersuchen. Diese Untersuchung war zum Zeitpunkt der Abfassung dieses Berichts noch nicht abgeschlossen und wird daher hier nicht behandelt.

Die zweite Untersuchung sollte besseren Aufschluß über die Selektivität der Wahl des Schultyps geben, soweit dies auf Grund des Leistungsniveaus der Schüler, die verschiedene Typen der Sekundarschule wählen, festgestellt werden kann.

Für diese Untersuchung wurden die Testdaten von Population 1b benutzt. Die zwischen verschiedenen Schultypen festgestellten Leistungsunterschiede können entweder auf Unterschiede in den Lehrplänen oder auf Unterschiede in den Eigenschaften der Schüler, die einen bestimmten Schultyp wählen, zurückgeführt werden. Da die Tests erst etwa 6 Monate nach Eintritt der Schüler in die Sekundarschule durchgeführt wurden, und da sich die Lehrpläne der Schulen vielfach beträchtlich überschnitten, wurde angenommen, daß die festgestellten Unterschiede im wesentlichen das Begabungsniveau und das Maß an Vorbereitung der Schüler bei Eintritt in die Sekundarschule aufzeigten.

Im Unterschied zu anderen Ländern war Population 1b in den Niederlanden eine zusammengesetzte Gruppe, die sowohl Schüler des letzten (6.) Jahres der Primarschule als auch Schüler des ersten Jahres der Sekundarschule umfaßte. Diese Zusammensetzung ermöglichte es, in den Vergleich auch diejenige Schülergruppe mit einzubeziehen, die unmittelbar vor dem Eintritt in die Sekundarschule stand.

Angesichts der allgemeinen Annahme, daß Jungen bessere Leistungen in Mathematik erzielen als Mädchen, wurden die Testergebnisse beider Gruppen getrennt untersucht. Es wurde festgestellt, daß in allen Schultypen Jungen besser abschnitten als Mädchen. Der Unterschied des durchschnittlichen Leistungsniveaus in den Teiltests machte jedoch im allgemeinen nicht mehr als einen Punkt der ursprünglichen Punktzahl aus. In der Gesamtwertung lag der Unterschied selten über 3 Punkte der ursprünglichen Punktzahl. Es besteht also eine starke Überschneidung in den Leistungen von Jungen und Mädchen desselben Schultyps.

Auf der anderen Seite wurden erhebliche Leistungsunterschiede zwischen Schülern verschiedener Schultypen festgestellt. Wenn man die verschiedenen Schultypen nach dem durchschnittlichen Leistungsniveau ihrer Schüler bewertet, kann man durchgehend feststellen, daß Mädchen in jedem Schultyp bessere Durchschnittsleistungen aufweisen als Jungen des nächsthöheren Typs.

Im allgemeinen bestätigen die Ergebnisse eine hohe Selektivität der Wahl des Schultyps, jedenfalls wenn man die durchschnittlichen Leistungswerte zugrundelegt. Bei der Untersuchung von Einzelergebnissen wurde jedoch auch eine beträchtliche Überschneidung nicht nur zwischen in der Rangordnung nahe beieinanderliegenden, sondern auch zwischen weit auseinanderliegenden Schultypen festgestellt. In der Gesamtwertung beträgt die Überschneidung zwischen in der Rangordnung am weitesten auseinanderliegenden Schultypen etwa 10%.

Ein weiteres auffälliges Ergebnis war, daß in Schultypen, in denen kein Unterricht in Algebra und Geometrie erteilt worden war, die Schüler dennoch beträchtliche Leistungen in diesen Fächern erzielten.

ANALYSE NATIONALE DES PAYS-BAS

par SIES WIEGERSMA, Amsterdam

Deux études séparées ont été organisées en utilisant les matières réunies aux Pays-Bas. L'une concernait l'examen de certains problèmes relatifs aux attitudes vis-à-vis de l'école et de la mathématique. Cette étude n'a pas encore été achevée, et par suite du manque de résultats spécifiques, ne sera pas traitée ici.

La seconde avait pour but de donner une meilleure idée de la sélectivité du choix éducatif, pour autant que ceci soit représenté par le niveau du rendement des élèves choisissant les différents types d'éducation secondaire.

Dans le but d'étudier ce problème, on a utilisé les résultats obtenus lors des tests de Population 1b. Toute différence que l'on a pu constater entre les différents types d'école peut être attribuée, soit aux programmes différents, soit aux caractéristiques différentes des élèves choisissant un type spécial d'école. Comme ce contrôle s'est effectué environ 6 mois après l'entrée à l'école secondaire, et comme il existe dans beaucoup de cas un chevauchement de programme entre les différentes écoles, on a pensé que ces différences caractérisaient principalement le degré d'habileté et de préparation des élèves, au moment d'entrer à l'école secondaire.

A l'opposé de ce qui se passe dans d'autres pays, la Population 1b aux Pays-Bas formait un double groupe, comprenant aussi bien les élèves de la dernière classe de l'enseignement primaire (la 6°) que ceux de la première année secondaire. Ceci permit d'inclure également dans la comparaison les quelques élèves qui allaient entrer dans l'enseignement secondaire.

Par suite de l'opinion générale selon laquelle les garçons obtiennent en mathématiques de meilleurs résultats que les filles, les résultats obtenus par les deux sexes furent étudiés séparément.

En ce qui concerne ce dernier point, on s'est aperçu que dans tous les types d'école, les garçons réussissent mieux que les filles. Cependant, la différence du niveau moyen du résultat sur les tests subsidiaires ne dépassait pas, en général, de plus d'un point le résultat total. Dans le cas du résultat total, la différence dépassait rarement de trois points le résultat brut. Il y a, par conséquent, pour le même type d'éducation, un chevauchement très net entre le résultat des garçons et celui des filles.

D'autre part, on a constaté d'importantes différences entre les différents types d'école. Lorsque plusieurs formes d'enseignement sont rangées selon les niveaux moyens des résultats, on a alors découvert que les filles, dans n'importe quel type d'éducation donné, obtiennent en général de meilleurs résultats que les garçons dans le type d'école qui intervient ensuite dans la classification.

En général, les résultats témoignent d'un haut degré de sélectivité dans le choix du type d'éducation, tout au moins lorsqu'on prend la moyenne des résultats. Cependant, en étudiant les résultats individuels, on remarque également un chevauchement considérable non seulement entre les types qui ont des places contiguës dans l'ordre de classification, mais aussi dans les types qui sont très distants dans l'ordre. Sur le résultat final, le chevauchement entre les écoles qui ont une distance maximale est d'environ 10%.

On a découvert finalement que dans tous les types d'école où l'algèbre ou la géométrie n'est pas enseignée, certains élèves obtiennent cependant de très bons résultats dans ces sujets.

NATIONAL ANALYSIS: SCOTLAND

by DAVID A. WALKER, Edinburgh

The Scottish national analysis was concerned with variables which were not available in most of the other countries in the IEA project. One such variable was an index of measured intelligence on a fairly uniform scale throughout the country. The second was a rating, peculiar to Scotland, of the teacher's qualifications to teach mathematics.

The Relation between Mathematics Score and Measured Intelligence

In the international inquiry it was not possible to incorporate a measure of ability apart from score in mathematics. In Scotland there was available for many of those taking the mathematics tests an index of measured intelligence, obtained at the age of ten or eleven. This normally took the form of an intelligence quotient or a verbal reasoning quotient obtained from group tests of the type constructed by the Moray House organisation in Edinburgh, and standardised on a scale with a mean of 100 and a standard deviation of 15. The Scottish investigators obtained a record of this quotient for as many as possible of the pupils tested in each population. For Population 1a, which consisted of all pupils aged thirteen at the time of testing, there were quotients for 82 percent of the sample. For Population 2, which consisted of pupils attempting the 0 grade examination in mathematics in the fourth year of the secondary course, the proportion was 81 percent. In the pre-university Populations, 3a studying mathematics and 3b not including mathematics in the final year of their courses, the proportion was 84 percent in each case.

The investigators wished to determine what association there was between the quotient and mathematics score in Populations 1a, 2 and 3a and to examine the distribution of the quotients in each of the Populations 1a, 2, 3a and 3b. The hypotheses to be tested were these:

1) There will be a substantial correlation between mathematics score and intelligence (or verbal reasoning) quotient in Population 1a (the 13-year-olds).
2) The distribution of quotients in Population 1a, where the whole population is attending school, will differ substantially from those in the older populations, when there is no longer a legal obligation to attend school.
3) The correlations between quotient and score for the older populations will be smaller than that for Population 1a.

The investigators realised that the quotients would be derived from a variety of tests, administered at different times and standardised on different age-groups, and that the scale already described was probably unjustifiably fine for such a mixture of data. The quotients were therefore transferred to the stanine scale shown in Table I.

TABLE I

Stanine Scores for Quotients

Quotient	Stanine Score
over 126	9
119–126	8
112–118	7
104–111	6
97–103	5
89– 96	4
82– 88	3
74– 81	2
below 74	1

In the following discussion it must be borne in mind that for Population 1a (the 13-year-olds) the quotients had been measured two or three years before the mathematics tests were given; for Population 2 (average age 16) they had been obtained five or six years previously; and for Populations 3a and 3b (average age 17) the quotients represented measures taken six or seven years previously.

When the stanine score form of the quotient was added to the battery of measures for Population 1a described in the main report, it was found that it took a prominent place, as is shown in Table II. The variables included in that table are those making the largest contribution to the variance of the mathematics score. Columns headed r give the simple correlation of each variable with mathematics score, and columns headed b the standardised regression coefficient. The decimal point which precedes each of these figures has been omitted. The first three columns show the position when the quotient is in the battery, accompanied only by the other measures shown. The final three columns show the position prior to the incorporation of the quotient, when the battery included a number of other measures, each contributing smaller sums to the variance.

The inclusion of the new variable, and the omission of all others but those named, raised the multiple correlation of the whole battery from 0.67 to 0.83 and the percentage of variance accounted for from 44 to 69.

TABLE II

Variables Associated with Mathematics Score (Population 1a)

Variables	Including VRQ			Excluding VRQ		
	r	b	Percent of variance	r	b	Percent of variance
Verbal reasoning quotient	78	53	42			
Opportunity to learn	69	28	19	56	40	22
Interest in mathematics	33	15	5	30	20	6
Status of father's occupation	30	06	2	27	13	4
Hours of instruction	28	05	1	29	13	4

The first hypothesis, which suggested a substantial correlation between quotient and mathematics score, was therefore strongly supported.

The distribution of quotients in each of the four populations is given in Table III, in which the percentages in the brackets are based on the total number of quotients available in each population.

TABLE III

Distribution of Quotients in Populations 1a, 2, 3a and 3b

Stanine Score	Populations 1a N	1a Percent	2 N	2 Percent	3a N	3a Percent	3b N	3b Percent
9	156	(4)	291	(14)	327	(27)	253	(14)
8	306	(7)	405	(20)	267	(22)	415	(23)
7	545	(13)	511	(25)	294	(25)	459	(26)
6	897	(21)	562	(28)	214	(18)	442	(25)
5	825	(19)	222	(11)	83	(7)	182	(10)
4	796	(18)	39	(2)	11	(1)	37	(2)
3	462	(11)	2	(0)			2	(0)
2	224	(5)						
1	109	(2)						
	4320	(100)	2032	(100)	1196	(100)	1790	(100)
Average Quotient		101		114		118		115
SD of quotients		14		10		10		10

The first point to be noted is that the distribution of stanine scores for Population 1a approximates fairly well to that for a normal population with mean quotient 100 and standard deviation 15. The percentage distribution of stanine scores for such a population is 4, 7, 12, 17, 20, 17, 12, 7, 4.

The second point is that the hypothesis regarding changed distributions is strongly supported. The average age of Population 2 at the time of testing was 16 years 0 months. Pupils in Scottish schools in 1964 were free to leave school soon after attaining the age of 15 and those who continued had the option of discontinuing the study of mathematics. The figures in Table III make it clear that those who discontinued the study by leaving school were drawn mainly from the less able sections. Those who discontinued mathematics, but remained at school to form Population 3b, had almost as high an average quotient as their colleagues in Population 3a.

The situation is shown more clearly in Table IV, which is based on several assumptions. The first is that the pupils whose quotients were known were a representative sample of all the pupils in their population. The second is that Populations 2, 3a and 3b can be regarded as equivalent to the outcomes of Population 1a, when appropriate adjustments have been made for differing sizes of age groups, although all populations were actually sampled in the same year. Since the assumptions are unlikely to be wholly satisfied, these estimates must be regarded as approximations.

TABLE IV

Percentages of 1a Population Continuing to Subsequent Stages

Stanine Score	Population		
	2	3a	3b
9	66	65	48
8	47	27	40
7	33	17	25
6	22	7	15
5	10	3	7
4	2		1
3			
2			
1			
All Scores	17	9	12

They indicate for example that 66 percent of the pupils who had stanine scores of 9 in Population 1a were likely to be presented in mathematics when they reached the level of Population 2. The figure of 65 percent for score 9 in Population 3a is suspect, being so far out of line from the other percentages. The origin of the discrepancy lies in the original data and probably arises from the recording in some cases of quotients derived from scales with standard deviations exceeding 15 points. Nevertheless the main trend is clear; the higher the stanine score, the greater the probability of the pupil continuing to study mathematics or to continue at school to study other subjects.

From each of these distributions it is possible to calculate the correlation between stanine score and likelihood of continuing at school to become a member of Population 2, or Population 3a, or Population 3b. The correlation coefficients are of the order 0.6 to 0.7. It would appear that verbal reasoning quotients measured at the age of 10 or 11 are not unreliable indicators of the likelihood of pupils reaching the top grades in the Scottish school system.

In view of the restriction in the range of quotients found in the older populations it was not surprising to find that the association between the quotient and mathematics score was weaker in Populations 2 and 3a than it had been in Population 1a.

The results of the analysis for Population 2 are shown in Table V, in which the three columns at the right hand of the table depict the position when the quotient was not part of the battery.

Table V

Variables Associated with Mathematics Score (Population 2)

Variables	Including VRQ			Excluding VRQ		
	r	*b*	Percent of variance	*r*	*b*	Percent of variance
Verbal reasoning quotient	30	28	8			
Interest in mathematics	29	27	8	30	25	8
Opportunity to learn	25	20	5	15	11	2
Level of instruction	15	08	1	17	14	2
Status of father's occupation	06	05	0.3	02	03	0.1

In this case the multiple correlation of the whole battery with mathematics score was increased only slightly, from 0.44 to 0.48, by the addition of the quotient and the omission of all variables except those listed above. The percentage of the variance accounted for was increased from 19 to 23. The third hypothesis – that the correlation would be lower for this population than for Population 1a – was supported.

Similar results were obtained for Population 3a, the pupils who were at the pre-university stage in mathematics. The results are shown in Table VI.

TABLE VI

Variables Associated with Mathematics Score (Population 3a)

Variables	Including VRQ			Excluding VRQ		
	r	*b*	Percent of variance	*r*	*b*	Percent of variance
Interest in mathematics	43	32	14	40	27	11
Hours of instruction	47	28	12	48	29	14
Level of instruction	36	12	4	36	16	6
Verbal reasoning quotient	20	18	4			
Opportunity to learn	24	09	2	18	08	1

For this population the multiple correlation was unchanged at 0.61 and the percentage of the variance accounted for remained at 37. Whatever the verbal reasoning quotient had added to the battery had been balanced by losses from other variables.

From these results we may conclude that, when pupils had reached the pre-university stage, differences among them in verbal quotients obtained several years previously were associated less strongly with differences in mathematics score. This statement is true probably because these pupils were already in the range of relatively high quotients, and it must not be interpreted, as is sometimes done, as a statement that ability in verbal reasoning is irrelevant to mathematical attainment where a wider range of ability is in question.

The Relation between Mathematics Score and the Qualifications of the Teacher

This problem is not easy to study on an international basis since equivalents of qualifications in one country are difficult, if not impossible, to obtain in another. Within a country which has a well-defined national system of teacher training and qualification it is much easier to test a hypothesis on the relation of the qualifications held by the teacher to the scores made by his or her pupils.

At the time of the inquiry, teaching qualifications in Scotland were described by a method which must have perplexed those from outside the country. The qualifications were stated in terms of the appropriate chapter or article of the regulations for the training of teachers. The highest qualification in mathematics was given under Chapter V and the recipient required to have a good honours degree in mathematics followed by a year's training in a training college (now described as a College of Education). For the purpose of this report these teachers will be described as specialist teachers.

Teachers with an ordinary degree which included the study of mathematics for two years, followed by the usual training, were qualified under Article 39. They are referred to here as sub-specialist teachers. Others with ordinary degrees and the usual training but without the Article 39 qualification are referred to as graduates.

Teachers of technical subjects, qualified under Chapter VI of the Regulations, were employed in some schools to teach mathematics; they are referred to under the heading "technical." Finally, there were substantial groups of pupils instructed by those without any teaching qualification, who appear under the category "unqualified."

For this analysis Population 1b was chosen in preference to Population 1a. These pupils were in the class or grade in which most of the 13-year-olds were to be found. Differences arising from pupils being in different grades were thus reduced, giving more scope for the teacher variable to operate. For a similar reason the pupils in academic courses in this population were considered separately from those in general courses. Teachers with higher teaching qualifications are more likely to be found teaching pupils in academic courses, and it would have been difficult to disentangle the factor of qualifications of teachers from that of abilities of pupils in accounting for the higher scores known to have been made by pupils in these courses. The same difficulty, though still present to some degree in Populations 2 or 3a, was likely to have less effect since the courses were all academic and ability of the pupil was not so likely to be associated with the qualifications of the teacher.

The results of the analyses for the three populations are shown in Table VII, from which groups containing fewer than 50 pupils have been excluded. In the academic courses followed by the more able pupils in population 1b there are no statistically significant differences among the scores of the four groups. It would appear that at that stage these abler pupils could learn equally well from teachers with high qualifications, low qualifications, or none at all. A closer examination of the knowledge and expertise of the 98 teachers described as unqualified would probably reveal that they had some knowledge of mathematics but had not been recognised by the appropriate authorities as qualified teachers.

The position is different for the pupils in general courses. Here those taught by specialist or sub-specialist teachers made significantly higher scores than those taught by graduate or technical teachers but there was no significant difference between the specialist and sub-specialist groups or between the graduate and the technical groups. Those taught by graduate teachers made significantly higher scores than were made by pupils having unqualified teachers. This may be partly due to the wide range of ability still remaining in the general courses after the academic stream had been removed. It seems possible that the pupils making the low average score of 6.8 were the backward pupils for whom only unqualified teachers had been found.

TABLE VII

Relation of Mathematics Score to Qualifications of Teacher

Population	1b			1b			2			3a		
Type of course	Academic			General			Academic			Academic		
Type of teacher	Mean score	SD	N	Mean score	SD	N	Mean score	SD	N	Mean score	SD	N
Specialist	36.2	11.0	274	18.8	10.5	153	30.4	8.8	1024	26.9	11.1	897
Sub-specialist	37.5	11.7	996	17.5	11.4	1746	27.3	8.0	1224	12.8	7.9	316
Graduate	35.7	21.8	82	12.1	10.8	469						
Technical				11.3	9.7	118						
Unqualified	38.1	9.8	98	6.8	7.9	211						

It is also worthy of note that the pupils in Population 1b in academic courses who were taught by graduate or unqualified teachers made significantly higher scores than those on general courses taught by specialist or sub-specialist teachers. Since type of course is so closely related to ability of pupil it is not possible without further analysis to determine the predisposing factor, but the findings of the first part of this paper suggest that the general ability of the pupil, as measured by the verbal reasoning quotient, is likely to be important.

In Population 2, where the pupils have been preparing for the first of their external examinations in mathematics, there were only two main types of teacher, the specialist and the sub-specialist. The pupils taught by the specialist teachers made significantly higher scores than did those taught by sub-specialist teachers. The same effect was shown still more strongly in Population 3a. Here the difference in the scores made by the two groups was substantial, amounting to about half the standard deviation of the whole group. In both of these populations the differences may be partly attributed to the practice in many schools of allocating the abler pupils to the more highly qualified teachers. Unfortunately it was not possible in this analysis to make an appropriate adjustment to the scores.

The general conclusion is then that the progress of the brighter 13-year-

old was independent of the qualifications of the teacher, but that the less able pupils made more progress under a specialist or sub-specialist, either being adequate. The 16- and 17-year-olds taking external examinations in mathematics produced better scores when taught by the specialist rather than by the sub-specialist.

DATENANALYSE FÜR SCHOTTLAND

von David A. Walker, Edinburgh

Die schottische Datenanalyse benutzte zwei Variablen, die in der internationalen Untersuchung nicht berücksichtigt werden konnten. Die eine Variable war die in Form eines Intelligenzquotienten oder des Quotienten der logischen Ausdrucksfähigkeit (*verbal reasoning*) gemessene Intelligenz von 10- und 11jährigen Schülern. Die andere Variable bestand in der Bewertung der Qualifikationen des Lehrers im Rahmen des schottischen Lehrerausbildungssystems.

Als der Quotient der logischen Ausdrucksfähigkeit mit den verschiedenen zur Erlangung der Werte der Mathematiktests verwendeten Messungsmethoden in Verbindung gebracht wurde, stellte sich heraus, daß er einen wesentlichen Teil der Varianz der Werte für Population 1a bestimmte, jedoch nur einen geringeren Teil für die Populationen 2, 3a und 3b. Die Verteilung der Quotienten in den vier Populationen ließ ebenfalls erkennen, daß Schüler, die auch über Beendigung der Schulpflichtzeit hinaus die Schule besuchten, höhere Quotienten aufwiesen, wobei allerdings nur wenige Schüler mit unterdurchschnittlichem Quotienten noch im Alter von 16 und 17 Jahren die Schule besuchten.

Lehrer wurden als Fachlehrer, nicht voll ausgebildete Fachlehrer (*sub-specialists*), Lehrer mit abgeschlossener Hochschulausbildung (*graduates*), technische Kräfte und nicht vorgebildete Kräfte eingestuft. Es stellte sich heraus, daß die von dreizehnjährigen Schülern im wissenschaftlichen Unterricht erreichten Leistungswerte in Mathematik unabhängig von der Ausbildung ihrer Lehrer waren, daß jedoch Dreizehnjährige im allgemeinen Unterricht höhere Werte erzielten, wenn sie von Fachlehrern oder nicht voll ausgebildeten Fachlehrern unterrichtet worden waren. In den älteren Populationen 2 und 3a erlangten Schüler, die von Fachlehrern unterrichtet worden waren, beträchtlich höhere Leistungswerte als Schüler, die von nicht vollausgebildeten Fachlehrern unterrichtet worden waren.

ANALYSE NATIONALE D'ECOSSE

par David A. Walker, Edinburgh

L'analyse entreprise en Ecosse a utilisé deux variantes qui n'ont pas pu être incorporées dans l'étude internationale. La première consistait à mesurer l'intelligence sous la forme d'un quotient d'intelligence, ou d'un quotient de raisonnement verbal, sur des élèves de 10 ou de 11 ans. La seconde consistait à évaluer les qualifications du professeur selon les règlements de la formation pédagogique en vigueur en Ecosse.

Lorsqu'on incorporait le quotient de raisonnement verbal dans la gamme des

mesures associées aux points obtenus lors des tests en mathématiques, on s'aperçut qu'il expliquait en grande partie les différences des points en Population 1a; mais une plus petite proportion en Populations 2, 3a et 3b. La répartition des quotients dans les quatre populations indiquèrent également que les élèves qui poursuivaient leurs études après la période de scolarité obligatoire, étaient principalement ceux aux quotients élevés, car il y en avait peu aux quotients en-dessous de la moyenne qui fréquentaient encore l'école à l'âge de 16 ou de 17 ans.

On répartit les enseignants en professeurs specialistes, spécialistes-auxiliaires, diplômés, techniques et non qualifiés. On se rendit compte que les points obtenus en mathématiques par des élèves de 13 ans en cours académiques n'avaient rien à voir avec les qualifications des professeurs, mais que ces mêmes élèves en cours généraux obtenaient de meilleures notes lorsqu'un enseignement leur était dispensé par des professeurs spécialistes ou spécialistes-auxiliaires. Dans les populations plus âgées 2 et 3a, les élèves éduqués par des spécialistes obtenaient de bien meilleurs résultats que ceux éduqués par des spécialistes-auxiliaires.

COMMUNICATIONS – BERICHTE – COMMUNICATIONS

THE VALUE OF THE IEA MATHEMATICS STUDY FOR EDUCATIONAL POLICY MAKING: TASMANIA

A VIEWPOINT FROM A STATE DEPARTMENT OF EDUCATION

The Education System of Tasmania

It may be as well to begin this comment with a brief statement about the Tasmanian system. Tasmania, as one of the six Australian states, has a system of government and independent schools, the former under the control of a central education department. In 1964, the year of the IEA Mathematics Project, there were 70,817 pupils in government and 14,385 in independent schools, the government secondary enrolments being 21,948. As in most countries, the years since the war saw a rapid development in education, particularly in the secondary field where the 1964 enrolment was 401% of the 1946 numbers. This increase has been partly through population growth and partly through increased survival rates: of those entering primary grade 6 in 1963, 43.8% remained for the fourth year of secondary education four years later, as compared with 18.1% of the 1950 grade 6 entry. This process is continuing and extending into the fifth and sixth years of secondary education.

This growth coincided with organisational and curriculum changes. With the extension of the compulsory period of education to that between six and sixteen, in 1946, there was a gradual change from a selective, bi-partite system to a comprehensive one. This procedure was completed by 1962, when the intake to all high schools was on a district basis, without selection, and the general form of organisation, though ranging from school to school, was comprehensive in type. At this same period there were considerable moves in curriculum revision, particularly in the mathematics and science areas. In mathematics, a number of separate curriculum experiments had been under way at various levels; in 1962, a new matriculation syllabus was introduced; in 1964, a four-year secondary syllabus was adopted and in 1966, a new programme of primary mathematics. Thus, in 1964 the new curricula were either just under way or had not yet been implemented and neither of the two experimental populations had followed the present primary or high school course, although the pre-university group had had a new course at that level.

It is plain, then, that the initial applications of the tests could not in themselves yield information about the mathematics courses but that they could help to establish base-lines from which later results would enable any progress to be assessed. It could be expected, however, that the information provided could be helpful with regard to many other aspects of policy.

The IEA Results for Australia

Mean Scores in the IEA Mathematics tests are shown in Table I for the Australian states and some national groups.

There are quite considerable differences between the states in Australia and between the participating nations. The obvious question asked by the administrator and the research-worker would be "Is it possible to relate these differences to differences in educational aims and practices, or in organisation, or in provisions"? An over-simplified answer to this is "no": there are no obvious answers. The over-all relations between total mathematics scores and other variables between countries are summarised in the IEA Report.[1])

TABLE I

Mean Scores of Australian States and National Groups at Two Levels

State or country	Mean score at eighth year level	Mean score at pre-university level
New South Wales	16.1	21.3
Victoria	21.0	25.7
Queensland	24.0	19.8
West Australia	16.9	14.6
Tasmania	15.9	26.0
Australia	18.9	21.6
Japan	31.2	31.4
England	23.8	35.2
United States	17.8	13.8
Scotland	22.3	25.5
Sweden	15.3	27.3
Mean for all nations	23.0	26.1
S.D. for all nations	15.0	13.8

"Total mathematics scores were correlated with 45 other, mostly independent, variables characterizing the school, the teacher, and the student in each country and population (see Table 1.12). Since the between-country components tend to average each other out, these correlations are rather low ... Of the variables characterizing the schools, size tends consistently to be positively related to the total scores at the lower level. At the upper level the picture is inconsistent ...

Length of teacher training is positively related to the total score and so are teacher ratings of the students' opportunity to learn the topics represented by the test items. ... Of the students' characteristics, fathers' and mothers' education and status of fathers' occupation tended at the lower level consistently to be positively related (on the level of .20) to mathematics score. In the terminal population these correlations varied quite widely due to variations in degrees of social selection and of retentivity. Students' interest in mathematics correlated .30 to .36 with total scores; students' plans and aspirations for further education correlated with the same scores about .35 to .40."

There was also an indication that students doing "new mathematics courses did better in the tests than students following traditional courses."

These results are important both for the connections they indicate and for those not indicated, since no significant correlation was found. Thus, class size has an unclear relationship to performance, but with a slight tendency at the lower level for larger classes to perform better. The length of the school week did not bear general relationship to success, although the amounts of mathematical and of total homework were positively related to performance. There is no clear-cut preference for comprehensive or selective systems, each having different benefits. A selective system tends to succeed relatively well in bringing a small student body up to outstanding achievement while the comprehensive system brings a larger group up to reasonably high levels of performance. The performance of the best students seems to be unaffected, however, where they are included with a wider intake. Japan with 100 per cent of students in comprehensive schools and England with 9 per cent both achieved very high results.

The picture revealed by the within-Australia results is not dissimilar. There is, however some indication that there is a relationship between average level of performance in the eighth year and time spent on mathematics in the previous seven years, a relationship which does not appear in the between-nations comparisons. The relationship between increase in level of achievement and holding-power which occurs between nations also appears within Australia as shown in Table II.

TABLE II

Indices of Selectivity and Increase of Level of Performance from Eighth Year to Pre-university Year

State	% Age of grade cohort studying mathematics	Index occupational selectivity	Increase in level of performance
New South Wales	14	5.3	2.49
Victoria	10	5.8	2.52
Queensland	19	6.3	2.21
West Australia	19	6.2	2.05
Tasmania	5	9.6	2.89
Australia	14	5.6	2.38

The other correlation data show a pattern similar to that quoted above. The picture, then, is not a clear one. There are no decisive relationships on which the administrator might seize to aid in policy decisions. There are, however, many important questions raised and some important issues brought into the open.

Implications for Policy and Research

The most obvious feature of the results of the IEA Mathematics Project to strike a Tasmanian administrator is that the Australian results were significantly below the combined means for all nations at both the eighth-year and pre-university levels, while the Tasmanian result was significantly below at the earlier level but not at the later. Because of the many variables recorded in the Project it is possible to consider these results in relation to three broad areas: the teaching program, the school and its organisation, the student and his background.

The teaching program. It is tempting, of course, to say that different results spring from different aims, but such a statement can have little justification. In mathematics perhaps more than in any other area the aims of teaching are similar internationally. The spirit of reform associated with such programs as the University of Illinois Committee on School Mathematics, the School Mathematics Study Group and the School Mathematics Project, to name only a few, has been widely and generally accepted and adopted into programs of similar emphasis although with some local variations of content. As mentioned above, Tasmania accepted new courses at the pre-university level in 1962 and for the preceding four years of secondary education in 1964. An analysis of the courses reveals aims and content generally similar to those of the newer programs in such countries as the United Kingdom and the United States of America.

The courses themselves, however, at the lower level in particular had not been adopted early enough to have significant and general effect for the IEA measurements. In one way this is a distinct advantage since it means that there is a baseline defined by the IEA tests which might be used to assess the results of implementation of the new primary and secondary courses. To follow this up, it has been decided to have two further applications of the IEA tests, the first in 1969 and the second in 1973. The first application will be for students who will have followed the new primary course for 2 years and are in their second year of the new secondary course. The second application will be for those who had the primary course for six years, followed by the secondary course. Not until 1977 would it be possible to assess the effects of the new courses followed for the whole of the school career, but no decision has been made for a repetition so far ahead.

In the meantime, the types of change encouraged in the courses would not be with respect to the aims but rather in relation to their more effective achievement. This would involve, for example, course changes designed to achieve better primary-secondary exchange, the development of more suitable materials, and experimentation with teaching methods. It would not involve at this stage changes in time allotment, even though there seems to be a possible connection between this and achievement. The Australian report on the IEA Project (as yet unpublished) derives a regression equation which predicts the mean mathematics score of a state sample from two variables associated with time, namely, the index of time spent on mathematics during the first 7 years of schooling and the measure of time spent on mathematics during the current year. The fit obtained was a close one. There is, however, little point in making major changes to the course structure while its effectiveness is still under review.

The school and its organisation. As indicated previously there is no clear connection between organisational variables and mathematics achievement. The lack of any such indication is, of course, as important as any positive connection would have been. There does not appear to be a general connection between class size or school size and achievement within Australia and, between nations, no general connection for class size and a slight positive connection for school size. The results would not point to any particular form of organisation as having a superiority in terms of mathematics achievement, which has the merit of allowing the proponent of any particular form to continue to experiment without discouragement (and equally without encouragement). Of some interest in this regard is the lack of significant relationship between achievement and the variability of occupational status of the fathers of students. This suggests that the comprehensive school with its mingling of social backgrounds is not detrimental to performance in mathematics. Any indication of a relationship, in fact, would tend to point to some possible benefit in a wide cross-section of home backgrounds.

A relationship of some interest is that while there seems to be no link between performance and time spent on mathematics homework, there is a strong positive link with time spent on all home-work. It may be that the private study of students is an even more important aspect of learning than has been realised as the above would indicate that students are able to select where to place their emphasis in time and to do so with some profit. Some scope for more flexibility in choice and emphasis would seem to be indicated.

A disquieting aspect of the investigation for Tasmanian schools relates to their selectivity. In all countries there is a positive relation between mathematics scores and social class,[2]) with lower-occupational groups scoring less throughout. Thus in England, for example, where the connection is very strong the mean scores for three broad social groupings are:

Professional, 42.2; White Collar, 33.2; Blue Collar, 19.7. In England at age 13, 14% of the children are from the Professional status group, compared with 61% from the Blue Collar group: in the pre-university year, 52% are from the Professional group and 19% from the Blue Collar. In Australia the comparable figures are 20% Professional, 47% Blue Collar at 13; 39% Professional and 26% Blue Collar at Pre-university.

Australia as a whole is thus a much more open system. If we define a Selectivity Index by the following:

$$\text{Selectivity Index} = \frac{\text{Proportion of Blue Collar students to stay on}}{\text{Proportion of Professional students to stay on}} \text{ we obtain}$$

$$\text{Australian S.I.} = \frac{47/26}{20/39} = 3.5$$

$$\text{English S.I.} = \frac{61/19}{14/52} = 12.2$$

A Selectivity Index of 1.0 would indicate no social bias in selection. The indices vary from 1.7 for USA to 32.7 for Germany.*)

The figures for Tasmania give the following result:

$$\text{Tasmanian S.I.} = \frac{44/19}{20/49} = 5.7$$

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*) The indices used here take a different set of groupings to those recorded in Table II.

The Tasmanian figure is markedly different from the other state figures which are all close to the total Australian figure. Tasmania's system is more occupationally selective than the other Australian states and thus Tasmania's higher mathematics results for the pre-university stage can be explained by this factor rather than by some more cheering cause. This index of occupational selection is possibly linked with factors to be considered in the next section.

It will be seen from the above discussion that the most immediate implications for Tasmania's system of education do not lie in the field of mathematics. Implications in this area will only be made clear by later investigations. It is, however, already clear that Tasmanian schools should be retaining more students at the upper levels, and particularly from certain occupational groups. Curriculum proposals have already been made with this view in mind and are in process of implementation. These are outlined in a report recently presented to the Minister for Education in Tasmania.3)

The student and his background. Some aspects of the background of students have already been covered, in particular, parental occupation. A similar position appears to hold in relation to the education of parents of the students but unfortunately data were not available for three of the Australian states so no general conclusion can be drawn.

Tasmanian students at the eighth-grade level are members of smaller classes, spend less time on secondary mathematics and on mathematics homework, and more time on all homework than do Australian students as a whole. While 87 per cent of them *expect* to take more mathematics only 58 per cent *desire* to do so and their interest scores are lower than for the other Australian states. While some of these figures are disturbing they call for no immediate action since the remedy is part of the purpose of the new courses in mathematics. Later investigations will need to check on the achievement of the various purposes of these courses.

More disturbing are the figures for years of education expected and desired. Tasmania has a statutory minimum age of 16, higher than most Australian states, yet at the eighth grade level we find that the mean figure for years of education expected/desired are 2.5/2.6 in Tasmania compared with 3.9/4.0 in Australia as a whole. There is a limiting of horizons here which is disturbing and which requires definite action. This is linked with the occupational selection mentioned in the previous section. The effect of this is high-lighted by the information on pre-university students, where the percentages expecting/desiring to take more mathematics are 79/75 for Tasmania as against 60/57 for Australia as a whole; an interest score for Tasmania of 7.6 compared with 6.7 for Australia; years of education expected/desired at 3.8/3.9, higher than all other Australian states but one; and, a higher occupational aspiration than all states but one. This improvement, however, must be seen more in terms of occupational selection than educational effect.

Conclusion

There are no broad generalisations to be drawn, comforting or otherwise. A number of issues are thrown into sharp relief. The first group of these relates to mathematics performance and can only be answered when the new courses have had time to show effect and when further IEA applications can aid analysis. The second group of these relate to educational expectation, occupational aspiration, interest and occupational selectivity. The Australian schools in general have moved a good distance towards an open and mobile system as distinct from a selective one,

academically or socially. Tasmania has not moved so far and should encourage a greater secondary retention, not merely to improve mathematical "yield" but for wider social and educational purposes.

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1) HUSEN, T. (ed.): *International Study of Achievement in Mathematics. A Comparison of Twelve Countries.* Stockholm/New York: Almqvist and Wicksell/John Wiley, 1967, Vol. II, p. 289.

2) CHOPPIN, B.: "Social Class and Educational Achievement," *Educational Research*, Vol. 10, No. 3, June 1968, pp. 213–217.

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LA VALEUR DE L'ETUDE DE L'*IEA* SUR LE RENDEMENT EN MATHEMATIQUE POUR LA POLITIQUE EDUCATIVE: LA BELGIQUE

La multiplication des contacts internationaux après 1945 a fait découvrir aux gens d'écoles que les méthodes et les programmes d'enseignement en usage dans d'autres pays sont souvent très différents de leurs propres pratiques dans lesquelles ils voyaient l'absolue perfection. Ils essayèrent de convaincre les collègues étrangers; ainsi se déroulèrent bien des dialogues de sourds qui ne furent d'ailleurs pas inutiles, car le doute fécond commença à fissurer les complexes de supériorité pédagogique: chacun en vint à admettre qu'il n'est pas un système national totalement supérieur, ni totalement inférieur aux autres.

Cette constatation amena l'*American Educational Research Association* et l'Institut de l'Unesco pour l'Education de Hambourg à organiser en 1958 une Conférence Internationale sur la Recherche Pédagogique où les participants dressèrent un premier inventaire des problèmes et des difficultés à franchir pour en aborder l'étude objective. En 1959, une recherche pilote sur des écoliers de 12–14 ans fut entreprise dans douze pays; elle permit la mise au point de méthodes valables d'échantillonnage et de comparaison. Un groupement plus stable, l'*International Association for the Evaluation of Educational Achievement* (*IEA*) décida d'effectuer un travail plus étendu et plus approfondi portant sur de véritables échantillons nationaux.

Le premier sujet abordé fut celui des mathématiques, spécialement au niveau de 13–14 ans et dans la classe terminale de l'enseignement secondaire.[1]) Le travail fut entrepris sous la direction du professeur T. Husén de l'Université de Stockholm et la coordination des activités fut assurée par l'équipe permanente de l'*IEA* située à l'Institut de l'Unesco pour l'Education à Hambourg. Les pays suivants y participèrent: l'Angleterre, l'Australie, la Belgique, l'Ecosse, les Etats-Unis, la France, la Finlande, Israël, le Japon, les Pays-Bas, la République Fédérale d'Allemagne, la Suède.[2]) L'analyse des travaux belges porta sur un effectif de 5.900 élèves du niveau de 13–14 ans et des classes donnant accès à l'université, provenant de 195 établissements officiels et libres des régimes de langues française et néerlandaise.[3])

Il eût été critiquable de demander le concours de tant de personnes pour se borner à comparer les notes aux épreuves, même si celles-ci étaient minutieusement préparées. En vue de rapprocher les résultats nationaux de variables qui auraient pu les influencer, on rassembla parallèlement une documentation spécialement:

– sur l'organisation scolaire, les modes de sélection et de différenciation;
– sur les programmes et les méthodes d'enseignement;

- sur les caractéristiques économiques sociologiques des familles, des écoles, des sociétés.

Les tests furent conçus, non seulement de manière à fournir des notes globales, mais aussi à donner des indications sur la maîtrise, d'une part des diverses parties des mathématiques, d'autre part, des techniques et des modes de pensée mis en oeuvre. En vue du choix des items, on procéda à une étude comparée des programmes et des manuels; chaque pays envoya des collections d'applications à une commission formée de mathématiciens et de spécialistes des tests; on composa 24 épreuves d'essai dont l'analyse des résultats permit de dégager 9 tests adaptés aux niveaux et aux sections à prospecter (chaque élève passa 3 ou 4 tests).

De la masse des documents rassemblés, on trouvera ci-après quelques constatations pouvant intéresser les autorités scolaires belges.

Les résultats belges

C'est la première question que posent les enseignants et les directeurs d'établissements quant aux apports d'une recherche à laquelle ils ont participé; certes, cette réaction est compréhensible, mais il faut se garder de tirer des conclusions précipitées de données sommaires: un jugement valable ne pourraît être tiré qu'après un examen approfondi de toutes les variables, spécialement le détail des programmes, les taux de retard, la différenciation de l'édifice scolaire, la déperdition des effectifs selon les âges. On citera un seul exemple à cet égard: en 1962–63, le pourcentage de la population terminale de l'enseignement pré-universitaire était de 13% en Belgique (4% dans les sections spécialement mathématiques et 9% dans les autres) contre 70% aux-Etats-Unis, (respectivement 18–52%).

Sous ces réserves, les résultats de l'échantillon belge peuvent être décrits très schématiquement de la manière suivante:

Dépassent la moyenne des douze pays:

Population 1a, 67% des notes belges totales;
Population 1b, environ 67%;
Population 3a, environ 70%;
Population 3b, environ 66%.

En ce qui concerne les parties du contenu mathématique:

- au niveau 1a, les notes standard les plus favorables sont relatives au calcul et à la géométrie, les moins favorables à l'algèbre et aux notions arithmétiques de base;
- au niveau 3a, les écarts les plus satisfaisants portent sur le calcul et l'algèbre, les moins satisfaisants sur la géométrie et les premiers éléments du calcul infinitésimal;
- au niveau 3b, les positions les meilleures sont aussi en calcul et en algèbre, les moins bonnes pour les notions élaborées d'arithmétique et l'analyse.

L'incidence de diverses variables sur les résultats

La part la plus considérable du compte rendu de la recherche est consacrée à l'étude *intra-* et *inter*-nationale de la concomitance de certains facteurs avec les résultats aux tests; dans les limites du présent article, on passera brièvement en revue les constatations qui ont paru les plus significatives pour les lecteurs belges.

En relation avec l'organisation scolaire

L'édifice des institutions scolaires diffère considérablement à travers les douze pays qui se sont prêtés à la recherche. Cependant, certains aspects de l'organisation ne semblent pas avoir influencé les résultats en mathématiques; ainsi, même au niveau de 13–14 ans, on ne peut déceler de tendance générale selon les âges du début de la scolarité obligatoire (5, 6 ou 7 ans) ou de la fin de l'école primaire (10, 11 ou 12 ans).

La variabilité des systèmes est étendue quant à la sélectivité aux passages de classe et aux niveaux où interviennent des sections différenciées; trois grands types d'organisation peuvent être distingués: celle, comme en Belgique où le doublement de classe est de pratique courante et où des bifurcations sont prévues dès la fin de l'école primaire; celle où l'école secondaire reste commune du moins pendant quelques années, mais où existe un système de classes parallèles; celle où les classes inférieures restent hétérogènes et ou un enseignement individualisé ou par groupes restreints permet d'éviter ou de limiter strictement le retard scolaire. Dans l'ensemble, on constate que les moyennes du premier groupe en mathématiques sont significativement supérieures à l'âge de 13–14 ans, mais cet avantage est pratiquement disparu au niveau pré-universitaire. La dispersion des notes, mesurée par les écarts-types, est plus grande dans les systèmes où les élèves sont répartis dans des classes parallèles selon les capacités que dans ceux où les classes sont hétérogènes.

Les pourcentages d'étudiants restés dans l'enseignement secondaire jusque 18 ans diffèrent considérablement; les résultats moyens, cela semble aller de soi, sont plus élevés dans la plupart des systèmes ayant gardé le moins d'élèves: une exception remarquable: le cas du Japon qui compte encore 57% de la classe d'âge au niveau pré-universitaire et dont les notes sont nettement supérieures à la moyenne de l'ensemble. Il y a lieu de noter, en outre, que les notes les plus hautes (les 5 ou 10% supérieures) dans les pays ayant gardé un taux élevé d'étudiants ne sont pas inférieures à celles des autres échantillons nationaux.

Un des tests étant commun aux niveaux 13–14 ans et 17–18 ans, dans les sections non spécialisées en mathématiques, on a pu apprécier le progrès moyen entre ces deux groupes, pour les résultats de cette épreuve évalués en notes standard par rapport à la moyenne de l'ensemble de l'échantillon, la différence s'est élevée à 2,60 écarts-types, variant de 1,83 à 3,16 selon les pays (Belgique, 2,88).

Selon le volume des établissements, les moyennes aux niveaux 3a sont les plus fortes pour le groupe composé des élèves dont les populations variaient de 700 à 1100 unités (les catégories étaient: 1–400; 401–700; 701–1100; au-delà de 1100).

Les échantillons nationaux étant répartis selon les nombres moyens croissants d'écoliers par classe, les corrélations étaient positives au niveau 1 (1a, +0,29; 1b, +0,43) mais négatives dans les classes terminales (3a, −0,41; 3b, −0,23). Cette variable ne paraît pas décisive: ainsi les résultats sont favorables en Belgique où la population des classes examinées au niveau de 13 ans est de 24 en moyenne, et au Japon où elle monte à 41 élèves.

Les réponses à un questionnaire témoignent d'un moindre intérêt des filles pour les mathématiques; elles sont d'ailleurs moins nombreuses dans les sections pré-universitaires consacrées plus spécialement à cette branche: en Belgique pour l'ensemble du niveau terminal, le rapport du nombre des garçons à celui des filles est de 1,47, alors qu'il monte à 7,13 pour les classes de catégorie 3a. Enfin, leurs notes moyennes sont nettement plus basses; les différences sont cependant très amenuisées dans les établissements soumis à la coéducation (l'échantillon belge est celui où les écoles mixtes sont relativement les moins nombreuses).

Relation avec les programmes et les méthodes

Une question posée aux professeurs portait sur le degré d'autonomie laissé à chacun dans le choix des matières et des moyens didactiques. Les systèmes sont très divers à ce point de vue selon les pays; les principales restrictions signalées sont l'imposition d'un programme ou d'un manuel, des directives quant aux méthodes, des dispositions réglementaires concernant les examens. L'analyse statistique des résultats aux tests semble conclure que les moyennes sont plus favorables lorsque des limites sont tracées à la liberté totale des enseignants.

On a demandé aux professeurs et aux élèves si des programmes modernisés étaient appliqués dans leur établissement; ce vocable couvrait des significations différentes: selon les réponses, il s'agissait de numération binaire; d'ensembles, de calcul vectoriel, de groupes, de matrices. Peu de réponses faisaient état de telles mutations; les taux les plus élevés étaient signalés aux Etats-Unis: 25% au niveau 1b, (Belgique 4%), 33% en 3a, (Belgique 13%) et 33% en 3b (Belgique 9%). Au niveau de 13–14 ans, les écoles ayant des programmes expérimentaux enregistraient des moyennes significativement plus élevées; dans l'année pré-universitaire, les données ne permettaient pas de conclusion.

L'importance moyenne de l'horaire consacré aux mathématiques variait de 4 heures à 8, 9 heures par semaine selon les échantillons nationaux; au niveau 1, les moyennes étaient en relation directe avec la durée hebdomadaire signalée spécialement pour les items exigeant peu d'effort de pensée; dans l'année terminale, il y avait autant de tendances négatives que positives. En revanche, les corrélations étaient nettement positives aux deux niveaux entre les résultats des tests et les temps consacrés à domicile aux mathématiques aussi bien qu'à l'ensemble des tâches.

Quant aux méthodes d'enseignement, au niveau 1, les élèves déclarant jouer un rôle actif dans l'élaboration des matières d'études enregistrent des moyennes plus élevées que ceux soumis à un enseignement plus formel. La tendance est inverse au niveau 3A.

En relation avec quelques variables sociologiques

Plusieurs questions concernent la condition professionnelle des chefs de famille; on s'est à ce point de vue basé sur la classification à 10 degrés établie par l'Organisation Internationale du Travail.

L'incidence de cette variable sociale sur l'effort scolaire général, s'est traduite nettement dans la modification des pourcentages entre les niveaux de 13–14 ans et pré-universitaire. Pour l'ensemble des effectifs, le pourcentage des trois catégories les plus élevées (universitaires, chefs d'entreprises, cadres supérieurs) passe de 19% pour la population 1 (Belgique 20%) à 46% en 3a (Belgique 33%) et 41% en 3b (Belgique 36%). Il semble résulter de ces données que les effets de la démocratisation des études se soient fait plus fortement sentir en Belgique que dans d'autres pays (par ex. en Allemagne Fédérale; 17% en 1b, 68% en 3a et 67% en 3b).

Un autre indice est significatif à ce sujet: les niveaux professionnels étant regroupés en quatre catégories, les moyennes calculées pour le niveau 1b, confirment le fait bien connu du rendement plus faible de la couche des travailleurs manuels par rapport à la plus élevée (enfants d'universitaires et de chefs d'entreprises). En ce qui concerne la Belgique, les écarts sont moins considérables que ceux de la moyenne générale.

Pour les résultats aux tests des étudiants dans l'enseignement de type académique répartis en quatre groupes selon les niveaux professionnels familiaux, la moyenne générale est plus basse d'environ 30% de l'écart type au niveau 1; du fait de la sélection aux passages de classe, l'écart est considérablement plus faible au niveau 3 (il est même négatif pour l'échantillon belge en 3b).

La durée hebdomadaire du travail à domicile ne semble pas en relation avec le niveau professionnel familial, ni avec le nombre d'années d'enseignement accomplies par le père.

L'homogénéité sociale, qu'elle soit intentionnelle ou qu'elle résulte de la sélection par les examens, diffère considérablement selon les systèmes et les écoles; on s'est demandé dans quelle mesure les différences de régime sont en relation avec les résultats en mathématiques répartis selon quatre couches professionnelles, trois degrés d'hétérogénéité ayant été établis d'après des critères statistiques. Au niveau 1, les moyennes sont plus élevées dans les écoles où la structure sociale est plus hétérogène et ce, dans toutes les catégories sociales; contrairement à des thèses parfois avancées, il semble que les jeunes élèves tirent en général meilleur parti de l'enseignement dans les établissements non soumis à la ségrégation sociale. La tendance est moins nette au niveau 3 où la déperdition des effectifs a profondément changé la composition des contingents dans les pays ayant un système très sélectif.

L'analyse des données a aussi été entreprise selon la densité du milieu géographique des lieux d'habitation, classée selon cinq degrés, des fermes isolées aux grandes agglomérations urbaines. En réalité, à chacune des quatre populations considérées, les moyennes présentent très peu de différences entre les groupes venant de milieux ruraux, de petites ou de grandes villes.

NOTES BIBLIOGRAPHIQUES

1) Au niveau 1a, l'ensemble des élèves de 13–14 ans; 1b le contigent en 2ème année de l'enseignement secondaire; 3a les sections pre-universitaires spécialisées en mathématiques; 3b les autres sections de ce niveau.

2) On trouvera le compte rendu détaillé des résultats dans les ouvrages suivants: HUSEN, T. (ed.): *International Study of Achievement in Mathematics. A Comparison of Twelve Countries*. Vol. I and II. Stockholm/New York: Almqvist and Wiksell/John Wiley 1967; POSTLETHWAITE, T. N.: *School Organisation and Student Achievement in Twelve Countries*. Stockholm/New York: Almqvist and Wiksell/John Wiley 1967.

3) Les travaux furent dirigés par une commission de vingt membres présidée par H. Levarlet, à l'époque Directeur Général de l'Enseignement Moyen et Normal. Il nous est agréable, à cette occasion de remercier les pouvoirs scolaires des secteurs publics et privés ainsi que le personnel des établissements d'enseignement et les centres psycho-médico-sociaux de leur précieux concours, de leur bonne volonté et de leurs encouragements.

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DIE BEDEUTUNG DER *IEA*-UNTERSUCHUNG ÜBER MATHEMATIKUNTERRICHT FÜR DIE SCHULPOLITIK: DIE BUNDESREPUBLIK DEUTSCHLAND

Vorbemerkung

Zu den 12 Ländern, die an der ersten Phase der großangelegten international vergleichenden Untersuchung über Schulleistungen und die sie beeinflussenden Faktoren teilnahmen, gehörte auch die Bundesrepublik. Der Ausdruck "Bundesrepublik" ist jedoch insofern nicht ganz zutreffend, als sie nur durch Hessen und Schleswig-Holstein vertreten war und selbst für diese Länder die statistische Repräsentanz nicht gesichert war. Daß hier bereits ein charakteristisches Symptom für

die Schwierigkeiten empirischer Großforschung in der Bundesrepublik deutlich wird, soll an anderer Stelle noch näher erläutert werden.

Hauptziel der Untersuchung, die sich zunächst auf das Gebiet der Mathematik beschränkte, war, das Verhältnis der durch internationale Tests ermittelten Mathematikleistungen zu verschiedenen, nach gleichartigen Kriterien erhobenen Variablen wie Schulorganisation, Lehrpläne und Lehrmethoden, soziale, wirtschaftliche, geographische, finanzielle Faktoren zu untersuchen. Gemessen wurden die Mathematikleistungen dreier Schülergruppen: der 13jährigen aller Schularten (Population 1a), eine Altersgruppe, die in allen Ländern noch unter die Schulpflichtzeit fällt, bzw. der Schüler des Schulleistungsjahres, indem sich die Mehrheit der 13jährigen Schüler befindet (Population 1b); der Schüler des letzten Schulleistungsjahres in Schulformen, die auf den Besuch von Hochschulen und Universitäten vorbereiten, und zwar sowohl der Gruppe in mathematisch-naturwissenschaftlich orientierten Zweigen bzw. der Schüler mit Mathematik im letzten Jahr (Population 3a) als auch der entsprechenden Schüler in nicht mathematisch-naturwissenschaftlichen Zweigen bzw. ohne Mathematikunterricht im letzten Schuljahr (Population 3b).

Mit dieser Untersuchung war zum erstenmal die Möglichkeit gegeben, anhand empirisch ermittelter Daten über die Leistungen vergleichbarer Schülergruppen auch die Auswirkungen verschiedener Schulsysteme besser abzuwägen als es der bisher übliche deskriptive und auf der Basis verschieden angelegter nationaler Statistiken beruhende Vergleich gestattete. Die Frage nach der "Produktivität" verschiedener Organisationsformen, die auch im Mittelpunkt der Schulreformdiskussion in der Bundesrepublik steht, ist, wenn überhaupt, durch Vergleichsuntersuchungen innerhalb eines Landes kaum befriedigend zu beantworten; weitgehend gemeinsame Traditionen, Einstellungen und Unterrichtspraktiken führen hier selbst bei Veränderung einzelner Faktoren, wie z.B. der Schulstruktur, zu geringen Variationen und lassen auch kaum Aussagen über die allgemeine Gültigkeit einer festgestellten Beziehung zu.

Ist es in der Bundesrepublik schon nicht möglich, einigermaßen verläßliche Angaben über den gegenwärtigen Leistungsstand vergleichbarer Schülergruppen verschiedener Bundesländer zu machen, da weder die Anforderungen standardisiert sind noch die nötigen Meßverfahren zur Verfügung stehen, so bleiben die Argumente für oder gegen Reformen vollends auf vorurteilsgeprägte Vermutungen über deren Auswirkung angewiesen, wie z.B. die Behauptung, daß eine Öffnung selektiver Ausbildungsgänge mit einem Niveauverlust verbunden sei. In dieser Hinsicht bieten die Ergebnisse der internationalen Mathematikuntersuchung trotz ihrer fachlichen Begrenzung und der möglichen methodologischen Einwände einige Ansatzpunkte für die Revision festgefügter Vorstellungen sowie für die Richtung weiterführender empirischer Forschung und schulpolitischer Entscheidungen.

Im folgenden sollen nun die für die bundesdeutsche Diskussion wichtigsten Untersuchungsergebnisse skizziert und einige Konsequenzen angedeutet werden.

Das wohl größte Interesse fanden die festgestellten Zusammenhänge zwischen der Schulleistung und Variablen der Schulorganisation. Fragen wie die nach der größeren Effektivität selektiver oder gesamtschulartiger Systeme, nach den Vor- und Nachteilen einer früheren oder späteren Differenzierung, nach der optimalen Größe von Schulen und Klassen, dem Einschulungsalter u.ä. wurden oder werden in allen Ländern diskutiert und in unterschiedlicher Weise zu lösen versucht. Die möglichen Auswirkungen bestimmter Änderungen sind auf nationaler Ebene besonders dann schwer abzuschätzen, wenn, wie z.B. im Falle des Einschulungsalters, in der Praxis eines Landes keine Variationen auftreten. Hier kann der internationale Vergleich gleichsam die fehlende experimentelle Situation zu ersetzen versuchen.

Schulleistung und Schuleintrittsalter

Das Schuleintrittsalter schwankt in den untersuchten Ländern zwischen dem 5. Lebensjahr (England, Schottland) und dem 7. Lebensjahr (Finnland, Schweden). Es könnte nun vermutet werden, daß ein früherer Beginn der Schulzeit auch mit höheren Schulleistungen in Beziehung steht. Tatsächlich konnten nur geringe Zusammenhänge zwischen dem Schuleintrittsalter und den Mathematikleistungen der 13jährigen festgestellt werden. Nur einige Länder mit einem Einschulungstermin von 6 Jahren zeigten signifikant höhere Durchschnittswerte gegenüber den Ländern mit einem Schuleintrittsalter von 5 und 7 Jahren. Da allerdings die beiden Extreme nur durch je zwei Länder vertreten waren, läßt sich bestenfalls vermuten, daß ein später Einschulungstermin mit schlechteren Leistungen bei den 13jährigen verbunden ist, während ein früherer Schulbeginn nicht unbedingt zu einem Leistungsvorsprung führt. Gliedert man die Leistungswerte nach der sozialen Herkunft der Schüler auf, scheint sich anzudeuten, daß ein früher Einschulungstermin (5 Jahre) Kindern aus den unteren Sozialschichten weniger zugute kommt als Kindern aus der Mittelschicht. Verwunderlich wäre dieses Ergebnis jedoch nicht, da wohl wichtiger als die Vorverlegung des Schulbeginns das sein dürfte, was während der zusätzlichen Schulzeit gerade auch an speziellen Hilfen für sozial benachteiligte Kinder geboten wird. Wenn, wie z.B. aus früheren Untersuchungen für England bekannt ist, die Leistungsauslese und damit auch eine Sozialauslese schon in der Primarschule beginnt – gefördert durch die Praxis der Niveaudifferenzierung (*streaming*) – werden von einem frühen Schulbeginn kaum Verbesserungen zu erwarten sein. Angesichts der bundesdeutschen Diskussion um die vorschulische Erziehung und vereinzelter Vorschläge zu einer Leistungsdifferenzierung auch in der Grundschule sollten selbst diese unsicheren Ergebnisse des internationalen Vergleichs Berücksichtigung finden.

Schulleistung und Schulgröße

Die Frage nach der optimalen Größe einer Schule spielt vor allem in den Ländern eine Rolle, die den Übergang zu einem Gesamtschulsystem planen. Wird einerseits gegen die entpersönlichte Atmosphäre einer "Massenschule" argumentiert, so lassen sich andererseits die gewünschten vielfältigen Differenzierungen in der Mittel- und Oberstufe einer Gesamtschule nur bei einer bestimmten Mindestgröße ökonomisch und effektiv organisieren. Entsprechend haben auch amerikanische Untersuchungen über das Verhältnis von Schulgröße und Leistungsstand ergeben, daß die durchschnittlichen Schulleistungen in kleineren Schulen niedriger sind als in größeren. Relativ eindeutige Ergebnisse ließen sich im internationalen Vergleich nur für die 13jährigen gewinnen. Die höchsten Leistungen in Gesamtschulen und selektiven Schulen wurden bei einer Größe von mehr als 800 Schülern erzielt, in hauptschulartigen Typen bei einer Größe zwischen 200 und 450 Schülern. Für die Population 3a waren die Zusammenhänge wegen der erheblichen Differenzen innerhalb der Länder weniger deutlich. Insgesamt zeigten sich für Gesamtschulen höhere Leistungen mit wachsender Schulgröße, für selektive Schulen schien die günstigste Größe dagegen bei 700–1100 Schülern zu liegen.

Es wäre jedoch wenig sinnvoll, diese Daten als empirisch abgesicherte Meßzahlen bei der Schulplanung zu verwenden, da neben der Größe einer Schule auch andere

Bedingungen wie Schuleinzugsbereich, Art der Binnengliederung, Rekrutierung des Lehrpersonals eine Rolle spielen und die Bedeutung der Schulgröße unter Umständen in den Hintergrund treten lassen können. Es ist z.B. denkbar, daß die Beziehung zwischen der Größe einer Gesamtschule und dem Leistungsstand der Schüler auch davon abhängt, ob, wie in England und Amerika, Lehrer ihre Schulen und umgekehrt auswählen können und dementsprechend große, gut ausgestattete Schulen auch qualifizierte Lehrer anziehen. Die Ergebnisse für Schottland, die die besten Leistungen in den kleinsten Gesamtschulen zeigten (Population 1a), lassen vermuten daß Gesamtschulen in relativ isolierten Gegenden, in denen für Schüler aller Begabungshöhen nur eine Schule zur Verfügung steht, trotz relativer Kleinheit einen hohen Leistungsstand erreichen können, da sie mangels Konkurrenz zu anderen Schulen der Gefahr entgehen, die besten Schüler an "bessere" Schulen zu verlieren. Schließlich wäre auch auf die Möglichkeit horizontaler Gliederungen von Gesamtschulen etwa nach dem englischen Modell der Altersgruppenstufung hinzuweisen; auf diese Weise könnte die Größe der einzelnen Schulen reduziert werden, ohne daß die Differenzierungsmöglichkeiten in der Oberstufe eingeschränkt würden, da diese ihre Schüler aus mehreren mittleren Gesamtschulen rekrutieren könnte.

Schulleistung und Klassenfrequenz

Ebensowenig konnte ein allgemeiner Zusammenhang zwischen der Größe einer Schulklasse und den Lernleistungen festgestellt werden. Wo Beziehungen sichtbar wurden, zeigten sich entgegen der verbreiteten Meinung, daß kleine Klassen den Lernerfolg begünstigen, bei den 13jährigen tendenziell bessere Ergebnisse in größeren Klassen, bei den älteren Schülern in kleineren Klassen (die Streubreite der Klassengrößen betrug bei der Population 1a und 1b 24–41, bei der Population 3a und 3b 12(15)–41). Auch aus diesem Ergebnis sollte noch nicht die Konsequenz gezogen werden, die Senkung der Klassenfrequenzen in der Unter- und Mittelstufe als unnötigen Aufwand anzusehen. Häufig werden große Klassen guten Lehrern übertragen und leistungsschwache Schüler in kleinen Klassen zusammengefaßt, in denen dann allerdings Lehrer weniger gern unterrichten und in der Regel auch nicht speziell ausgebildet sind. Aus anderen Untersuchungen geht außerdem hervor, daß einflußreicher als die Klassengröße die praktizierten Unterrichtsmethoden, die Flexibilität und die Einstellung der Lehrer sein dürfte. In der Regel werden auch Klassen zwischen 25 und 40 Schülern noch nach derselben Methode unterrichtet, während erst extrem kleine oder große Schulklassen die Anwendung besonderer Methoden ermöglichen oder gar voraussetzen. Die Frage nach der Klassengröße wird ebenfalls anders beantwortet werden können, wenn man den Lehrer nicht mehr als die hauptsächliche Informationsquelle ansieht, an alternierende Folgen von Großgruppenunterricht und individualisierten Unterrichtsformen mit Hilfe technischer Medien und Unterrichtsprogrammen denkt. Schließt man zudem neben dem Ziel fachlicher Leistungen, um die es hier ausschließlich ging, auch andere Unterrichtsziele ein – Kooperationsfähigkeit, selbständiges Fragen, Diskutieren, Erarbeiten –, werden erst sorgfältig kontrollierte Unterrichtsversuche die Frage nach der optimalen Größe der Gruppen im Hinblick auf verschiedene Zielsetzungen entscheiden lassen.

Schulleistung und Differenzierung der Oberstufe

Heftiger umstritten als Schuleintrittsalter, Schul- oder Klassengröße ist in der deutschen Schulreformdiskussion die Frage nach dem Grad der Spezialisierung in der

Oberstufe und nach ihren Auswirkungen. Allgemein wird angenommen, daß höhere Leistungen in einzelnen Fächern nur bei einer Reduktion des verpflichtenden Fächerkanons zu erwarten seien. Die Untersuchung bestätigte diese Hypothese (Population 3a) nicht. Die Mathematikleistungen schienen sogar in Ländern mit mehr als 8 Fächern im letzten Schuljahr höher zu sein als in Ländern, in denen nur noch 3–4 Fächer unterrichtet werden. Nimmt man jedoch die extrem niedrigen Werte für die USA (4 Fächer) aus der letzten Ländergruppe heraus, lassen sich keine signifikanten Unterschiede mehr erkennen, die die Kontroverse zuungunsten der Spezialisierung entscheiden ließen. Abgesehen von der unterschiedlichen Interpretation eines "Faches" – manche Länder schlossen auch nicht wissenschaftlich orientierte Gebiete ein – blieb auch die verschiedene Dauer der Spezialisierung unberücksichtigt. Während z.B. in England die Spezialisierung auf wenige Fächer schon 3 Jahre vor Abschluß der selektiven Sekundarschule erfolgt und in der Regel konstant bleibt, ist es in den USA möglich, sich im letzten Schuljahr andere Fächer zu wählen als im Jahr zuvor und damit den Grad der Spezialisierung zu verringern. Allerdings scheint ein breites Fächerangebot mit einer längeren Schulzeit in Verbindung zu stehen. Das Durchschnittsalter der Schüler lag in den 4 Ländern mit wenigen Schulfächern im letzten Jahr unter 18 Jahren, in Ländern mit mehr als 8 Fächern – mit Ausnahme Japans – über 18 Jahren (die Bundesrepublik stand mit fast 20 Jahren vor Schweden an der Spitze der 12 Länder).

Schulleistung und Schulstruktur

Im Mittelpunkt des Interesses stand mehr oder weniger der Vergleich selektiver, mehrgliedriger Schulsysteme mit gesamtschulartig organisierten Systemen. In allen hochindustrialisierten Ländern führt der wachsende Bedarf an qualifizierten Kräften zu einer Expansion des Schulbesuchs auf allen Stufen der Ausbildung. Besonders Länder mit einem mehrgliedrigen System, in dem in der Regel nur eine Schulform, der selektive, akademisch orientierte Typ der Sekundarschule, eine Minderheit von Schülern auf den Universitätsbesuch vorbereitet – ein Charakteristikum der westeuropäischen Länder – stehen vor der Notwendigkeit, ihr Schulsystem, das noch weitgehend die starre Klassengliederung einer vorindustriellen Gesellschaft widerspiegelt, zu demokratisieren und die Vergeudung von Begabungen durch strukturelle Barrieren möglichst zu verringern. In diesem Zusammenhang stellt sich jedoch für Länder mit selektiven wie mit gesamtschulartigen Schulstrukturen gleichermaßen die Frage, wieweit eine Öffnung des Zugangs zu weiterführenden Schulen nicht zu einer Minderung der Qualität der Ausbildung führe oder umgekehrt gefragt, ob und in welchem Ausmaß die Ausbildung von Hochqualifizierten in Gesamtschulen möglich sei.

Die Ergebnisse der *IEA*-Untersuchung wurden nun häufig als eindeutiger Beweis nicht nur für die gleiche Leistungsfähigkeit von Gesamtschulen gegenüber selektiven Schulen sondern sogar für deren Überlegenheit angeführt, eine Interpretation, die z.B. für Länder wie England, das sich gerade nach jahrzehntelanger Diskussion für ein Gesamtschulsystem entschieden hatte, zwar verständlich erscheint, der Gesamtschuldiskussion jedoch keinen Dienst erweist. Einschränkungen sind von den Verfassern selbst betont worden, z.B. aufgrund unzureichender Klassifikation der Schultypen. Die Zuordnung zu dem Typ Gesamtschule war innerhalb eines Landes wie zwischen den Ländern schon uneinheitlich, und die Angaben der Schüler über die Kurse innerhalb der Schulen bedeuteten eine weitere Fehlerquelle. Trotzdem sind die Ergebnisse des Vergleichs selbst ohne wohlwollende Interpretation geeignet, zumindest einige Befürchtungen hinsichtlich der Auswirkung von Gesamtschulen zu reduzieren.

Zunächst dürfte kaum verwundern, daß die Durchschnittsleistungen bei den 13-jährigen in selektiven Schulen höher waren als in den entsprechenden akademisch orientierten Kursen einer Gesamtschule. Da zugleich die Streubreite der Leistungen in Gesamtschulen höher war, läßt sich daraus noch nicht auf eine prinzipiell größere "Leistungsfähigkeit" selektiver Schulen schließen, da die verschiedenen Auslesemechanismen beider Schultypen jeweils zu anders zusammengesetzten Schülergruppen führen. Dagegen zeigten Schüler der allgemeinen Kurse in Gesamtschulen bessere Durchschnittsleistungen als die entsprechenden Schüler in Hauptschultypen.

Für die Population 3a ergaben sich signifikant bessere Leistungen in selektiven Schulen, jedoch zeigten die Ergebnisse für Gesamtschulen erhebliche Unterschiede, auch wenn man die eher vergleichbaren Anteile der Altersgruppe in Population 3b zugrundelegt. Die Leistungsunterschiede dürften demnach auch auf anderen Faktoren beruhen als ausschließlich dem der Schulstruktur. Vergleicht man jedoch die Durchschnittswerte der Schüler in selektiven Schulen und entsprechenden Kursen in Gesamtschulen (Population 3a) innerhalb der Länder, in denen beide Schulsysteme nebeneinander bestehen, ergeben sich kaum noch Unterschiede. Diese Ergebnisse scheinen immerhin anzudeuten, daß in Gesamtschulen die leistungsschwächeren Schüler bessere Ergebnisse erzielen und daß leistungsstärkere Schüler den Vorsprung, der sich zunächst für Schüler selektiver Schulen zeigt, im Laufe der Schulzeit ausgleichen.

Ein Vergleich der Mittelwerte allein bleibt jedoch insofern noch wenig aussagekräftig, als durch die erheblich schwankenden Anteile der Altersgruppe im letzten Jahr der Sekundarschule verschieden zusammengesetzte Schülergruppen verglichen werden. Während in den USA noch 70% der Altersgruppe auf dieser Stufe eine Schule besuchen, liegt der niedrigste Anteil bei 8% (Niederlande). Die Bundesrepublik liegt mit einem Anteil von 11% zusammen mit Frankreich an vorletzter Stelle. Allgemein ist festzustellen, daß der relative Schulbesuch in Ländern mit einem Gesamtschulsystem z.T. erheblich höher liegt als in Ländern mit einer vertikalen Schulstruktur. Um daher die Frage genauer beantworten zu können, ob die niedrigeren Leistungsmittelwerte für Schüler der Gesamtschulen einen allgemeinen Niveauverlust bedeuten oder durch das Vorhandensein schwächerer Schüler zustandekommen, müssen die Leistungen gleicher Anteile von Schülern einer Altersgruppe verglichen werden. Für die Population 3a waren es die oberen 4% der Altersgruppe, der niedrigste Anteil, der sich in einem der Länder noch innerhalb dieser Population befand. Die Durchschnittsleistungen wiesen jetzt eine viel geringere Streubreite auf. Insgesamt rückten Länder mit hohem relativen Schulbesuch nach dieser Berechnung auf der Rangskala auf, während Länder mit starker Selektivität ihre Position verschlechterten. Hatte die Bundesrepublik schon bei dem Vergleich der Durchschnittsleistungen aller Schüler nur den 7. Platz eingenommen, so fiel sie jetzt auf den 11. Platz, noch hinter die USA (9. Platz), die vorher die letzte Stelle eingenommen hatten. Auch für die Population 3b fiel die Bundesrepublik von dem erstaunlichen 1. auf den 3. Platz (hier von insgesamt nur 8 Ländern). Diese Ergebnisse lassen nun nicht mehr auf eindeutige Zusammenhänge zwischen Schulleistung und Schulstruktur schließen. Aus ihnen geht allerdings auch hervor, daß weder eine Erhöhung des relativen Schulbesuchs mit einer Senkung des Niveaus verbunden sein muß noch daß starke Selektivität die beste Gewähr für hohe Leistungen bietet. Die niedrige Position der Bundesrepublik für Population 3a läßt zugleich erhebliche

Zweifel an der Funktionstüchtigkeit der gymnasialen Zweiggliederung aufkommen. Obwohl unsere Abiturienten des mathematisch-naturwissenschaftlichen Zweigs fast 2 Jahre älter sind als die anderer Länder und der geringe Anteil der Altersgruppe auf eine scharfe Auswahl der Besten schließen lassen könnte – die Bundesrepublik steht mit einem relativen Schulbesuch von 4.7% (3a) bzw. 6.5% (3b) am unteren Ende der Länderskala –, kann nicht gerade von einer besonderen Förderung mathematisch befähigter Schüler gesprochen werden.

Noch genauer läßt sich der "Ertrag" verschiedener Schulsysteme ermitteln, wenn man vergleicht, wieviel Prozent einer Schüler- bzw. Altersgruppe in den einzelnen Ländern bestimmte internationale Standardwerte erreichen (Perzentile der gesamten 3a-Stichprobe). Hier zeigt sich nun, daß die Prozentsätze der Schüler in den oberen Perzentilrängen umso höher sind, je geringer der Anteil der Altersgruppe im mathematisch-naturwissenschaftlichen Zweig ist. Die Schwankungen zwischen Ländern mit etwa gleicher Schulbesuchsrate sind jedoch erheblich. In Belgien erreichen (bei einem relativen Schulbesuch von 4%) 21% der Schüler das oberste Perzentil, in England 12%, Frankreich 9% (relativer Schulbesuch von jeweils 5%), in der Bundesrepublik jedoch nur 2%. Unter 11 Ländern steht sie damit an 8. Stelle. Vergleicht man jedoch die Anteile der Altersgruppe, die einen bestimmten Standard erreichen, läßt sich eine positive Korrelation mit der Höhe des relativen Schulbesuchs feststellen, wenngleich sie für die unteren Perzentile eindeutiger ausgeprägt ist als für die oberen. Das bedeutet, daß der Leistungsstandard bei erweitertem Zugang nicht sinken muß, vielmehr der Anteil derer mit hohen Leistungen durchaus erhöht werden kann. Nach dieser Berechnung steht die Bundesrepublik wiederum, diesmal in allen Perzentilen, auf den 3 letzten Plätzen der Rangliste von 11 Ländern. Sind schon die Anteile der Altersgruppe, die mathematisch-naturwissenschaftliche Zweige besuchen, relativ gering, so erreichen erheblich niedrigere Prozentsätze als in anderen Ländern (Belgien, England, Japan, Schweden, USA) einen internationalen Leistungsstandard in Mathematik.

Schließlich sei noch auf den auch in dieser Untersuchung bestätigten Zusammenhang zwischen selektiver Schulstruktur und Sozialauslese hingewiesen. Ein Vergleich der sozialen Zusammensetzung (gemessen am Beruf des Vaters) der Gruppe der 13jährigen mit der der Schüler im letzten Sekundarschuljahr ergab in Ländern mit vertikalen Schulsystemen einen höheren Grad sozialer Selektivität als in Ländern mit Gesamtschulsystemen, wenn auch innerhalb der Länder mit einem selektiven Schulsystem, d.h. auch vergleichbarem relativen Schulbesuch, Unterschiede bestehen. Ebenso zeigte sich, daß die als Leistungsauslese intendierte schulische Selektion umso stärker auch eine Sozialauslese bedeutet, je früher die Auslese vorgenommen wird. Der Grad der sozialen Auslese ist in der Bundesrepublik, in der die Selektion auch am frühesten vorgenommen wird, am höchsten, fast dreimal so groß wie in den von der Schulstruktur und dem Schulbesuch her vergleichbaren Ländern England und Frankreich. Unser Schulsystem, das nach den Ergebnissen der *IEA*-Untersuchung sich zumindest für den Bereich der Mathematik als nicht gerade leistungseffektiv erwiesen hat, schließt zudem auch breite Gruppen von einer weiterführenden Schulbildung ganz aus.

Auch zeigte sich in diesem Zusammenhang eine deutliche positive Beziehung zwischen sozialer Herkunft und Mathematikleistungen bei den 13jährigen. Für Population 3 blieb dieser Zusammenhang nur noch für die USA bestehen, vermutlich da hier wegen des hohen Anteils der Altersgruppe in Vollzeitschulen die soziale Zusammensetzung der Schülerschaft sich nur wenig verändert, während in anderen

Ländern die fortschreitende schulische Selektion zu einer Konzentration der oberen Sozialschichten im letzten Schuljahr führt. Die Streubreite der Durchschnittsleistungen von Schülern aus den verschiedenen Schichten ist jedoch zwischen den Ländern erheblich; in einigen Ländern liegen die Leistungen von Schülern der oberen Berufsgruppen noch unter denen der Schüler aus unteren Berufsgruppen. Hierbei dürften die allgemeinen Leistungsunterschiede zwischen den Ländern eine Rolle spielen, bedingt wiederum durch die verschiedene Organisation der Schulen, ihre curricularen Inhalte und ihre Arbeitsweise. Die Studie erbrachte ebenso wie frühere amerikanische, englische und schwedische Untersuchungen auch einige Hinweise darauf, daß Schüler aller Sozialschichten in sozial heterogen zusammengesetzten Schulen bessere Leistungen zeigen als in Schulen mit geringer sozialer Streuung (besonders für Population 1). Dieser Zusammenhang bedürfte zwar noch eingehenderer Untersuchung, da bei der positiven Korrelation zwischen Sozialstatus des Vaters und Leistungshöhe der Schüler eine sozial homogene Zusammensetzung der Schule je nach der Struktur des Einzugsgebiets ebenso identisch sein kann mit einem geringen durchschnittlichen Leistungsniveau der Schule. Zumindest aber sollte dieses tendenzielle Ergebnis bei der Planung von Gesamtschulen hinsichtlich ihres Standorts bzw. ihres Einzugsgebiets berücksichtigt werden, da nur bei einer tatsächlich sozial heterogenen Zusammensetzung dieser Schulen ihre Leistungsfähigkeit in der Förderung von Schülern verschiedener Sozialschichten zu kontrollieren wäre.

Zusammenfassung

Die Zusammenfassung der Ergebnisse beschränkte sich weitgehend auf Gesichtspunkte, die die Leistungsfähigkeit des bundesdeutschen Schulsystems abschätzen lassen und Hinweise für die schulpolitische Diskussion und Planung bieten. Einleitend war schon die fehlende Repräsentanz der deutschen Stichprobe erwähnt worden. Es erscheint nun allerdings müßig, die niedrige Position der Bundesrepublik im internationalen Vergleich unter Hinweis auf die geringe Aussagekraft von Daten, die nur für zwei Bundesländer erhoben wurden, als nicht erwiesen abzuwehren. Wichtiger erscheint die Frage nach den Gründen, die empirische Forschung in der Bundesrepublik und die Ermittlung zuverlässiger Aussagen erschweren, damit auch den Prozeß notwendiger, gezielter Veränderungen behindern. Die Bundesrepublik konnte sich erst zu einem späteren Zeitpunkt an der Planung des internationalen Projekts beteiligen, da die Finanzierung der hier entstehenden Kosten auf Schwierigkeiten stieß. Das bedeutete, daß sie an der ersten Phase der Testkonstruktion und organisatorischen Gestaltung des Projekts nicht beteiligt war. Berücksichtigt man ferner, daß in der Bundesrepublik bislang keine entsprechenden Tests wenigstens zur Messung der Schulleistungen zur Verfügung stehen, daß damit auch die geringen Erfahrungen in der Testkonstruktion jede entsprechend angelegte Untersuchung erneut behindern und verzögern, wird hier eine dringend reformbedürftige Lücke sichtbar. Die finanzielle Sicherung von empirischer Großforschung wäre ein Desiderat, die bisher durch den Kulturföderalismus eingeschränkte Möglichkeit, repräsentative Informationen zu sammeln, ein zweites.

Aus organisatorischen und finanziellen Gründen konnte die Bundesrepublik nur durch zwei Bundesländer vertreten sein, wobei unter die organisatorischen Gründe wohl in erster Linie die Schwierigkeit fällt, mit 11 Kultusministerien erfolgreiche Verhandlungen zu führen. Doch nicht einmal für diese zwei Bundesländer konnte eine repräsentative Zufallsstichprobe wie in allen anderen Ländern gebildet werden, ein Mangel, der nicht der mit der Untersuchung betrauten Institution, dem Deutschen Institut für Internationale Pädagogische Forschung in Frankfurt (DIIPF) anzulasten ist, sondern wiederum auf die geringe Erfahrung von Schulen und Lehrern mit der Durchführung von Tests und die durch die Finanzlage beschränkte Möglichkeit, geschulte Kräfte mit der Administration der Tests zu betrauen, zurückgeführt werden kann. Die Schulen für die Stichprobe der Population 1b – nur diese wurde in der Bundesrepublik erhoben – wurden daher nach der Wahrscheinlichkeit ausgewählt, mit der eine relativ objektive Durchführung der Untersuchung gesichert erschien. In Schleswig-Holstein wurden sie von der Schulbehörde benannt, in Hessen danach ausgewählt, ob Schulpsychologen die Untersuchung leiten konnten.

Aus den geschilderten Schwierigkeiten empirischer Forschung in der Bundesrepublik ließe sich zunächst die Notwendigkeit ableiten, zumindest die Sammlung von Informationen zu koordinieren, damit wenigstens die Vorbedingung jeder Untersuchung, nämlich die Möglichkeit, ein angemessenes Bild der schulischen Situation zu erhalten, geschaffen werden kann. Eine weitere Forderung ergibt sich aus methodologischen Einwänden gegen die vorliegende Studie, die häufig als Beispiel für die begrenzte Tragweite quantitativer Forschungsmethoden angeführt wird, wenn z.B. die auftretenden Unterschiede zwischen Ländern mit strukturell ähnlichen Schulsystemen unerklärt bleiben.

Die Konsequenz wäre nicht so sehr, psychometrische Methoden stärker mit interpretativen Verfahren zu verbinden als, wie oben angedeutet, erheblich mehr und genauere Informationen über vermutete Zusammenhänge und Einflußfaktoren zu gewinnen, d.h. auch Instrumente zu entwickeln, mit denen nicht nur die Leistungen von Schülern gemessen werden können, sondern auch die Einstellungen und die Motivation von Schülern, Lehrern, Eltern u.a. Erst dann werden auch genauere Aussagen über die Chancen, gewünschte Ziele zu erreichen, möglich sein.

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THE INTERNATIONAL STUDY OF ACHIEVEMENT IN MATHEMATICS A FEW EXAMPLES OF POINTS OF SPECIAL INTEREST TO TEACHERS

The fourth question in Test No. 9 [1]) asked the student to integrate the expression $1/(x^2 - 5x + 6)$ between the limits 0 and 1. This was one of the tests taken by the samples from the pre-university Population 3a. Table I shows the proportion of students in the sample from each country who were able to answer the question correctly, and also, under "Retentivity" the proportion of the whole age group who were classified as belonging to Population 3a.

It will be seen that there is a remarkably long range in the middle column. The proportion of students who were able to do the question varies from 4% in The Netherlands to 68% in England. How can we account for this? When we turn to the "Retentivity" column we see that the figures for England and The Netherlands are both 5%. Belgium, England, France, Germany, The Netherlands and Scotland all have practically the same low retentivity. Australia, Sweden and the United States all have high retentivity, and Finland, Israel and Japan come in between. The average proportion right is 24% for the group of countries with low retentivity, 24% again for the middling countries, and 15% for the countries with high retentivity. Within each group there is a considerable range, so that while retentivity will do a little to account for the variation in the scores it does not take us very far.

On the other hand, as may be seen from pages 72 and 73 of Volume II, retentivity accounts for the major part of the variation between the countries in total score, on all items. When the 3a scores are regressed against the 1a scores, the difference in age between Populations 1a and 3a, and the retentivity index the multiple correlation is .84, and the retentivity index has a standardised weight of .73, against .27 for the age difference and .14 for the 1a score. Thus retentivity accounts for most of the variation in total score, but for very little of the variation in this particular item.

TABLE I

Percent Responding Correctly to Qu. 4/Test No. 9 and Retentivity of School System at Population 3a Level

Country	% Correct	Retentivity
Australia	11	14
Belgium	10	4
England	68	5
Finland	09	7
France	12	5
Germany	28	5
Netherlands	04	5
Israel	43	7
Japan	21	8
Scotland	20	5
Sweden	15	11
USA	19	18

If retentivity will not do as an explanation we must look elsewhere, and we need not look very far. The experienced teacher knows that what pupils learn depends very largely upon what they are taught, and he will naturally conclude, rightly that methods of integration play a larger part in sixth form mathematics in England than they do elsewhere. He will go on to draw the further conclusion that when methods of integration are taught, to pupils of the calibre of English sixth forms, they can be taught successfully. He will go on to conclude that they are not commonly included in this part of the curriculum in most countries, and he will ask why this should be so.

This rather striking example will serve to illustrate one of the main uses that the Report can have for teachers of mathematics. Most of the tables given in the Report bear mainly on matters of general educational and indeed of social policy. It is the item analyses that most concern the mathematics teacher as such. The format of these analyses is given on pages 42 and 43. The items themselves, and a summary analysis, are given on pages 312 through 359, and the complete analyses are given in a separate publication under the title *Item Statistics by Country and Target Population.*[2])

Table II relates to the first test, A, in the whole series. This was one of the tests given to Populations 1a and 1b. The first column, which is extracted from pages 312 through 318, gives the unweighted average, for Population 1a, of the proportions

TABLE II

General Means and Means for USA and Japan for Test A

Test A Item	(1) General mean	(2) USA	(3) Japan	(1)–(2) G.m.–USA	(3)–(2) Japan–USA	Topic
1	84	77	80	7		
2	77	70	88	7		
3	85	75	92	10	17	Brackets
4	65	66	80	−2		
5	48	42	72	6		
6	43	32	72	9		
7	21	10	34	11←	15	Mensuration
8	42	25	76	17←	31	Mensuration
9	27	29	05	−2		
10	20	11	43	9		
11	70	65	90	5		
12	33	35	35	−2		
13	38	17	59	21←	42	Mensuration
14	31	43	37	−12		
15	27	18	44	9		
16	19	16	24	3		
17	22	22	41	0		
18	66	58	65	8		
19	17	10	39	7		
20	10	11	14	−1		
21	22	25	31	−3		
22	26	11	40	15←	29	Mensuration
23	63	50	51	13←	1	Brackets

getting the item right in each country. The second and third columns give the corresponding figures for the United States and Japan. The actual question comprising each item is set out on pages 312 through 318. The columns for the United States and Japan are taken from *Item Statistics by Country and Target Population.*

By subtracting the country scores from the general mean we can find the items for which the country is strong or weak. Thus there are six items for which the United States score falls below the general mean by more than ten. These are marked by arrows. In the next column to the right the United States scores for these items have been subtracted from those for Japan, which is the highest scoring country. The nature of each of these items is indicated by the word in the column on the extreme right. Four of them concern mensuration, and two the handling of brackets as may be seen by reference to pages 312 through 318.

By extracting more information from *Item Statistics* Table II could be extended to cover all the tests, and similar tables could be produced to cover all the populations in any country. Teachers who feel disinclined for such a lengthy operation, or who would prefer to do some preliminary exploration before undertaking it, will find it useful to look at the summarising tables given on pages 32 through 34. In these tables the items are grouped in several different ways, including grouping by content area. For each group of items a subscore is given, expressed in standard form. For this the grand mean of all pupils tested in a given population serves as the zero point, and the standard deviation of all pupils tested, multiplied by a hundred, as the unit of measure. Table III is extracted from the table on page 33, for the pre-university Population 3a, by retaining the six columns representing the countries with low retentivity and the eight rows giving the subscores for content areas.

Since these countries all have about the same retentivity we have a fair comparison. Looking at the first two columns we see that while Belgium and England have almost the same total score this score is made up in different ways. Belgium is strong on new mathematics, algebra, analysis, and sets. England is strong on geometry, analytical geometry, and particularly on calculus. If we look at the third column we see that France, with a somewhat lower total score, is particularly strong in new mathematics, sets, and logic. If we look at the last column we see that, like England, Scotland is relatively strong in the calculus but, unlike England, also relatively strong in logic. The low total score for Scotland is partly accounted for by the fact that the Scottish pupils are younger than the others.

TABLE III

Subscores for Selected Countries in Population 3a

		Country					
	Number of items	Belgium	England	France	Germany	Netherlands	Scotland
Total score		65	66	53	19	42	−4
New mathematics	17	66	45	67	−11	27	−8
Algebra	19	98	59	32	−10	14	−1
Geometry	5	26	42	12	14	27	11
Analytical geom.	5	36	47	51	46	65	−7
Calculus	9	−32	93	14	66	37	2
Analysis	13	39	24	49	18	87	−24
Sets	5	65	2	89	−13	16	−8
Logic	6	40	39	83	−5	−18	11

It is reasonable to think that the national differences in the subscores for content groups are not accidental, but represent national differences in the degree of importance attached to various aspects of the subject. It may not be unduly fanciful to trace them back a long way, to the times of Newton and Descartes. Is it the case that greater weight is attached to the calculus in England and Scotland because of its importance for applied mathematics and classical physics? And is the lesser weight given to sets and logic a reflection of the extent to which the national temper leans towards empiricism? And if so do these differences take effect mainly in producing differences in the amount of time devoted to teaching different parts of the subject, or is it also the case that such differences are re-inforced by differences in national aptitude? Supposing that the times were equalised, would it still be the case that French speaking pupils would be better at the more abstract, and English speaking pupils at the less abstract, parts of mathematics? How far is it reasonable to think of an optimum curriculum in mathematics, irrespective of differences in national temperament and circumstances?

The high correlations (.79 for Population 1a and .80 for Population 3a) for country means between the total mathematics score and the pupils opportunity of learning the subject matter of the tests were to be expected. They may reflect both differences in the curricula and differences in the extent to which pupils had progressed. That they represent to at least some extent differences in the curricula may be seen from the table above, which makes it apparent that the total scores are fairly sensitive to the weights given to different parts of the curriculum in the testing. Thus giving a greater weight to the calculus would have increased the scores of the English speaking at the expense of the French speaking countries, and vice versa for giving greater weight to set theory. The weights actually given had to be in the

TABLE IV

Population 1a Mathematics Scores Adjusted for Percentage of Men Teachers, Homework Index, and Fathers' Occupation Index

Country	Percentage of men teachers A	Home-work index B	Fathers' occupation index C	Actual D	Mathematics score From regression E	Mathematics score Adjusted F
Australia	41	61	44	20.4	20.9	20.9
Belgium	42	114	43	27.7	26.2	23.1
England	39	54	40	19.3	17.9	23.0
Finland	37	110	47	24.1	24.5	21.2
France	37	91	41	18.3	20.7	19.2
Japan	50	83	50	31.2	29.6	23.2
Netherlands	43	90	44	23.9	24.7	20.8
Scotland	39	48	39	19.1	17.0	23.7
Sweden	39	61	45	15.7	20.2	17.1
USA	25	69	47	16.2	14.4	23.4
Mean	39	78	44	21.6	21.6	21.6
Weights	5.16*) .640**)	0.955*) .438**)	3.23*) .220**)			

The correlation matrix is:

	A	B	C	D	r	b	rb
A	1	.15	.11	.73	.73	.640	.467
B	.15	1	.34	.61	.61	.438	.268
C	.11	.34	1	.44	.44	.210	.097
D	.73	.61	.44	1			.832 = R^2

---

*) Metric weights.
**) Standardised weights.

nature of a compromise. Since the curricula have different weights the tests cannot be perfectly adapted to the curriculum of each country, and the teachers from any country will have their own opinion about the extent of the fit. Within reasonable limits the test makers tried to be inclusive – that is, to give most countries the opportunity of showing strength where they possessed it. There were exceptions. For example the applied mathematics that forms about half the work of English sixth forms was not tested at all, because in other countries it is either not done at the school level or regarded as part of physics. This question is of course more important at the pre-university level than in the earlier stages of the course, where there is much more common ground. It is reasonable to think that the high correlation at the earlier stage reflects chiefly different degrees of progress in a curriculum that does not differ very much from country to country. But even within a common curriculum there may be different degrees of emphasis, as the example of mensuration in Table III shows.

The countries differed considerably in the proportions of men and women engaged in teaching mathematics. In this connection Table IV is an interesting one.

It will be seen that the percentage of men, the homework index, and the fathers' occupation index together reduce the variation in the national scores for 13-year-olds by five sixths, and that the major weight in effecting this reduction is the proportion of men teachers. This was between countries. Within countries homework is more important and sex of teacher less.

Table V presents some more correlations between countries.

TABLE V

Population 1a

Correlation between Country Means

A = Men teachers %
B = Attitude to mathematics (sign reversed)
C = Attitude to man and his environment
D = Mathematics score

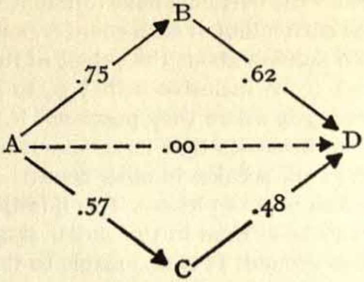
The correlation matrix is:

	A	B	C	D
A	1	.75	.57	.73
B	.75	1	.35	.78
C	.57	.35	1	.69
D	.73	.78	.69	1

which gives

	r	b	rb	b^2/c
A	.73	−.004	.00	.000
B	.78	.616	.48	.163
C	.69	.477	.33	.150
		R^2 =	.81	.494 J

If we take the order as A, B and C, D we have



for the path diagram, the influence of A on D being entirely indirect, through B and C.

This is certainly striking; the reader is entitled to his own view as to the extent to which it is convincing. It is only one of a large number of possible patterns, each of which can be considered on its merits.

"Considered on its merits" means something like this. The absence of correlation is convincing evidence of the absence of a causal relation, but association alone is not enough for positive evidence. The analysis will rule out many initially promising conjectures. But the choice among the conjectures that survive the analysis must be guided by other considerations. To the extent that we are rational beings we hold views with varying degrees of conviction, according to the evidence with which we are familiar. New evidence, if relevant, changes the degree of conviction, sometimes reducing it to zero and sometimes raising it to near certainty. Association is necessary for relevance, but it is not enough. Judgment is also needed, if relevance is to be interpreted in a causal sense. What is meant by judgment here is easier to exemplify than to define. For example, in the writer's judgment the judgment of most teachers will accept the explanation given above for the wide national variations in the pre-university standard. The explanation, in terms of the standard at thirteen, the length of the course, and the severity of the selection accords well with common sense. So perhaps does the first explanation offered for the narrower variation at thirteen, in terms of the proportion of men teachers, the homework index, and the parental occupation index. But the alternative explanation, in which the proportion of men teachers operates indirectly through the two associated attitudes reminds one of Hucklebery Finn's comment "Interesting but steep."

In addition to the examples cited here the teacher will find many others of interest in Volume II. In each case he will be able to bring his professional judgment and experience to bear.

REFERENCES

1) Husen, T. (ed.): *International Study of Achievement in Mathematics. A Comparison of Twelve Countries.* Stockholm/New York: Almqvist and Wiksell/John Wiley, 1967, Vol. II, p. 355. All page numbers given in the text refer to volume II of this publication.

2) *International Project for the Evaluation of Educational Achievement. Item Statistics by Country and Target Population. Phase I: International Study of Achievement in Mathematics. A Comparison of Twelve Countries.* Hamburg: IEA c/o Unesco Institute for Education.

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HOW SHOULD NATIONAL PART SCORES BE WEIGHTED?

The stresses laid on various parts of a subject are likely to vary from country to country. This raises an interesting question. If the parts are measured by sub-scores in the tests what weights should be used in combining the sub-scores into a total score?

The tables on pages 32 through 34 of Volume II of the IEA study 1) illustrate the problem. Thus on page 33 we have the table for the terminal secondary year (Population 3a), in which we have sub-scores for algebra, geometry, analytical geometry, calculus, analysis, sets and logic. It is at once apparent from the table that some countries lay more stress on calculus and analysis, and others on sets and logic. Giving more weight to calculus and analysis would raise the total scores of countries in the first class, and vice versa. But what can the best weights be? And do different weighting systems make much difference? It is plain enough that an arbitrary choice of weighting system could make an enormous difference. But it is equally plain that in practice the choice should be restricted to systems that have some claim to be considered fair.

Choice of a system

The weights actually used were determined by the number of test items allotted to each of the seven branches. This represents the pooled judgements of the test makers from the participating countries. There are two obvious alternatives. One

TABLE I

National Subscores Expressed as Standard Scores (0, 100)

Country	Algebra	Geometry	Analytical geometry	Calculus	Analysis	Sets	Logic	Total	Total standardised
Australia	−110	−104	−112	−40	−117	−105	−86	−674	−127
Belgium	165	58	46	−93	34	160	154	524	93
England	84	113	83	165	2	−14	151	584	110
Finland	−34	30	−108	−48	−17	−130	−175	−482	−91
France	28	10	96	2	55	226	129	546	103
Germany	−58	16	79	109	−11	−56	−12	67	13
Israel	153	33	59	139	140	−17	−67	436	82
Japan	24	106	32	−40	81	57	3	263	50
Netherlands	−9	61	143	49	136	24	−60	344	65
Scotland	−40	6	−98	−23	−100	−42	47	−250	−47
Sweden	2	−60	−31	−3	13	−69	−90	−238	−45
USA	−205	−269	−187	−213	−216	−34	6	−1120	−212
Mean	0	0	0	0	0	0	0	0	0
s	100	100	100	100	100	100	100	413	100

is to give each of the seven branches the same weight. The other is to let the weights be the direction cosines on the principal component. It is shown below that all three systems produce very much the same results. The rank order is unchanged for nine of the twelve countries. For Israel the rank orders are 1, 4 and 2. For England they are 2, 1 and 1. For France they are 4, 2 and 4. (See Table VII). This shows that in mathematics the differences in national stress are not very serious. But it is conceivable that in some other subjects they might be more so.

To obtain these results we begin by re-writing the table on page 33. In this table the country weights have been determined by the size of the samples, whereas for our purpose the countries should have equal weights. The standard deviations on page 33 are standardised on students, whereas we need them standardised on countries. Making these adjustments produces Table I, except for the two columns at the right.

By adding along each row we obtain the total score for each country, when the branches are given equal weights. The standard deviation of those totals is 413, which is reduced to 100 for the standardised totals on the extreme right. This column is reproduced as B in Table VII.

From Table I we now obtain the correlations between the branches (see Table II).

TABLE II

Correlations between National Subscores

Subject		1	2	3	4	5	6	7
Algebra	1	1	1.760	.666	.519	.753	.495	.376
Geometry	2	.760	1	.747	.657	.766	.299	.284
Analytical geometry	3	.666	.747	1	.700	.842	.554	.367
Calculus	4	.519	.657	.100	1	.604	−.063	.055
Analysis	5	.753	.766	.842	.604	1	.409	.011
Sets	6	.495	.299	.554	−.063	.409	1	.735
Logic	7	.376	.284	.367	.055	.011	.035	1

The latent roots can now be obtained by iteration from Table II. The first three turn out to be 4.13, 1.59, and .60, corresponding to 59.0%, 22.7%, and 8.6% of the variance. The corresponding component weights are shown in Table III.

The large size of the first latent root suggests that there is not likely to be much difference between the rank orders from giving equal weights to the branches and from the cosines on the principal component; this subsequently turns out to be the case. The second component contrasts stress on the calculus and analysis with stress on sets and logic. The minor third component, with 9% of the variance, against 23% for the second, brings out a further contrast between the calculus and logic on the one hand, and analysis and sets on the other. Inspection of the sums of squares in the right hand column suggests that the remaining four components, which together cover rather less than 10% of the variance must be mainly concerned with contrasts in the first three branches, since most of the variance of the last four is already exhausted.

If we now apply the weights in Table III to the subscores in Table I we obtain the scores for each country on the three components, and can standardise them by dividing by the latent roots. The results are shown in Table IV.

TABLE III

Latent Roots, % Variance, and Subscore Weights for the First Three Components

Subject	Component I	II	III	S.S.
Algebra	.88	.05	−.10	.79
Geometry	.88	−.17	.10	.81
Analytical geom.	.91	−.01	−.02	.83
Calculus	.70	−.49	.43	.92
Analysis	.88	−.28	−.40	1.00
Sets	.54	.76	−.29	.95
Logic	.43	.81	.40	1.00
Total	4.13	1.59	.60	6.31
% Variance	59.0	22.7	8.6	90.3

TABLE IV

National Standardised Scores for the First Three Components

Country	Component I	II	III
Australia	−124	−53	40
Belgium	86	177	−81
England	102	9	234
Finland	−72	−138	−71
France	84	164	−59
Germany	16	−69	121
Israel	96	−107	−54
Japan	53	16	−94
Netherlands	77	−66	−91
Scotland	−55	27	108
Sweden	−35	−74	−49
USA	−228	114	−5

We transfer the first column, for the principal component, to Table VII, where it appears under C. In considering the columns for the second and third components in Table IV we must remember that they differ from the first column in an important respect. In the columns for the second and third components the signs resemble awards of the Garter, in having no damned merit about them, at least according to Lord Melbourne. In the first column positive signs indicate merit, and

TABLE V

Intercorrelation Matrix

Country		1	2	3	4	5	6	7	8	9	10	11	12
Australia	1	1	−.612	.691	−.095	−.285	.602	.064	−.771	−.296	.433	.025	.042
Belgium	2	−.612	1	−.357	−.414	.590	−.873	−.556	.289	−.536	.242	−.489	.578
England	3	.691	−.357	1	−.026	−.528	.564	.222	−.600	−.388	.645	−.148	−.091
Finland	4	−.095	−.414	−.026	1	−.771	.105	.672	.458	.415	−.228	.570	−.918
France	5	−.285	.590	−.528	−.771	1	−.447	−.693	.082	−.212	.002	−.600	.838
Germany	6	.602	−.873	.564	.105	−.447	1	.217	−.435	.451	−.129	.211	−.390
Israel	7	.064	−.556	.222	.672	−.693	.217	1	−.102	.451	−.580	.981	−.767
Japan	8	−.771	.289	−.600	.458	.082	−.435	−.102	1	.377	−.225	−.119	−.276
Netherlands	9	−.296	−.536	−.388	.415	−.212	.451	.451	.377	1	−.838	.510	−.602
Scotland	10	.433	.242	.645	−.228	.002	−.129	−.580	.225	−.838	1	−.669	.404
Sweden	11	.025	−.489	−.148	.570	−.600	.211	.981	−.119	.510	−.669	1	−.683
USA	12	.042	.578	−.091	−.918	.838	−.390	−.767	−.276	−.602	.404	−.683	1
Total		.798	−1.138	.984	.768	−1.024	.876	.909	−.322	.322	.507	.589	−.865
Latent vectors													
5th shot		.24	−.89	.23	.83	−.91	.66	.98	−.04	.71	−.56	.91	−1.00
6th shot		.21	−.88	.21	.83	−.90	.64	.97	−.03	.72	−.56	.91	−1.00

negative signs lack of it. But in the second column a positive sign means that a country is better at sets and logic than at calculus and analysis, and vice versa for a negative sign. Similarly in the third column a positive sign indicates relative success in the calculus and logic, and relative lack of it in analysis and sets, while the negative sign indicates the opposite. The second column shows Belgium, France and the United States as the countries that are relatively strong on sets and logic, and Australia, Finland, Germany, Israel, The Netherlands and Sweden as countries that are relatively stronger in calculus and analysis. England, Japan and Scotland appear as well balanced, despite the fact that England has much the highest score in the calculus (see Table I). In the third small component England, Germany and Scotland appear together as relatively strong in the calculus and logic.

These facts can of course be traced in Table I, particularly when we have Table IV to tell us where to look. Without Table IV we might have been misled, for example by the high score of England in the calculus or by the low score of the United States in sets, and so failed to see that the United States goes with France and Belgium in the stresses of its curriculum, and England with Scotland and Japan.

We have analysed Table I by columns, to obtain the correlations between the subscores. If instead we analyse it by rows we can obtain the correlations between countries, as shown in Table V.

The most striking feature of Table V is the large size of some of the correlations, which range from .981 between Sweden and Israel to −.918 between the United States and Finland. This is in sharp contrast with Table II, where all but one of the correlations are positive, and the average value is just over .5. In Table V the average value is small and negative. This is because the correlations between subscores in Table II contain the element of general mathematical ability, which is eliminated from the correlations between countries in Table V. In the correlations in Table V each country's subscores are reckoned from its own mean. This suggests that the first latent vector from Table V ought to look much like the vector of standardised scores for the second component derived from Table I, and this is in fact the case. The first step in the iterative solution is shown in the "Total" row below Table V. This is a rather poor shot, because of the balance of signs. The fifth and sixth shots are shown below and it will be seen that the sixth does not differ much from the fifth, although two or three more would be needed to reach complete two figure agreement. The sixth shot is close enough to make the general point in Table VI where it is put on the same scale as the second column in Table IV.

In column B in Table VI the signs have been reversed to bring out more clearly the correspondence with column A. It will be seen that both columns group Belgium, France and the United States together at one end of the scale and Finland, Germany, Israel, The Netherlands and Sweden at the other. The first group are relatively strong in sets and logic, and the second in calculus and analysis.

Correlating by subscores and correlating by countries correspond to correlating by tests and correlating by persons in the early work of Sir Cyril Burt and Sir Godfrey Thomson. The subscores play the part of the tests, and the countries that of the persons. These authors showed that if both analyses were carried out in terms of covariances the agreement between the loadings of the person equations and the factors of the test equations, and vice versa, would be exact. This is because the score matrix can be doubly centred in terms of covariances. This is not possible when the covariances are replaced by unity, so that when the analyses are carried out in terms of correlations the correspondence becomes somewhat rough. This was

TABLE VI

Second Component and Latent Vector

Country	A*)	B**)
Australia	−53	−29
Belgium	177	122
England	9	−29
Finland	−138	−115
France	164	125
Germany	−69	−89
Israel	−107	−134
Japan	16	4
Netherlands	−66	−100
Scotland	27	77
Sweden	−74	−126
USA	114	138

*) National scores on the second component in the analysis by subscores (i.e. column II from Table IV).

**) Latent vector from Table V above, on the same scale as A, with the signs reversed.

the reason for stopping the iteration for Table V at the sixth shot. Even if we had gone on we should not have obtained an exact correspondence.

The general principle involved is interesting and striking. The score matrix itself at once suggests that there ought to be some of reciprocity between the analysis by rows and the analysis by columns. Carrying out both analyses shows that this is indeed the case. It may be thought that the principle is too technical to justify spending much computer time on exemplifying it, but perhaps there is a case for carrying out both kinds of analysis in one instance. In general the analysis should be by columns (subscores) rather than by rows (countries), since the column analysis shows the large general factor, which is omitted from the row analysis. For terminal mathematics the general component in the analysis by columns accounted for 59% of the variation, and the second component for 23% (see Table III). The 23% for the second component is 56% of the variation remaining when the first component is set aside. In the analysis by rows the first latent root (of twelve) is 5.3, or 44%, and this corresponds to the 56% from the column analysis, the correspondence being only rough for the reason given above. Both analyses bring out the contrast between the curriculum patterns in Belgium, France and the United States on the one hand and Australia, Finland, Germany, Israel, The Netherlands and Sweden on the other. But the column analysis also brings out the fact that (owing mainly to different degrees of retentivity) there is a very long range between countries in general mathematical proficiency.

Comparison of Weighting Systems

It was natural that, having begun the component analysis, we should continue it until we had accounted for most of the variation, so that we could see how the countries grouped themselves in the stresses in their curriculum, but it is now time to return to our original purpose, which was to compare the three weighting systems. The results are set out in Table VII.

TABLE VII

National Scores Obtained by Taking Subscore Weights (A) as Proportional to the Numbers of Items (B) as Equal for Each Subscore and (C) as Given by the Principal Component. Ranks in Brackets.

Country	A	B	C	Range	A–C
Australia	−114 (11)	−127 (11)	−124 (11)	13	10
Belgium	93 (3)	99 (3)	86 (3)	13	7
England	103 (2)	110 (1)	102 (1)	8	1
Finland	−55 (10)	−91 (10)	−72 (10)	36	17
France	74 (4)	103 (2)	84 (2)	29	−10
Germany	0 (7)	13 (7)	16 (7)	16	−16
Israel	122 (1)	82 (4)	96 (2)	40	26
Japan	42 (6)	50 (6)	53 (6)	11	−11
Netherlands	50 (5)	65 (5)	77 (5)	27	−27
Scotland	−52 (9)	−47 (9)	−55 (9)	8	3
Sweden	−23 (8)	−45 (8)	−35 (8)	22	12
USA	−239 (12)	−212 (12)	−228 (12)	27	−11

Correlations

	B	C
A	977	.990
B		.997

Changes of Rank

	A	B	C
Israel	(1)	(4)	(2)
England	(2)	(1)	(1)
France	(4)	(2)	(4)

In Table VII column A contains the national scores that were actually used, and that appear in many tables in the Report. The only difference is that their scale has been changed to give them a mean of zero and a standard deviation of a hundred. Column B is the right hand column of Table I, and column C is the principal component column from Table IV. It will be seen that there is a very close resemblance between the three columns. The largest range between them is 40, for Israel, and the average range is 21. This is very small in comparison with the ranges within the columns, or with the column standard deviations which are all 100. In the right hand column, for A–C, the largest entries are 26 for Israel, and −27 for The Netherlands. The weights actually used gave rather more importance to the branches in which Israel did well, and rather less to those in which The Netherlands did well, than the weights given by the principal component. Hence Israel gained and The Netherlands lost. The amounts are however quite small. On the original scale the standard deviation of country means was 6.27. This has been scaled up to 100. Consequently 26 corresponds to 1.63 on the original scale, and 27 to 1.69 and these are the two extreme changes. Averaging the changes, without regard to sign, we have 12, 12.6, or .79 in the original units.

The close relations between the scores produced by the three weighting systems may also be seen from the correlations given at the foot of Table VII. Finally, we may note that the rank order is the same in all three systems for nine of the twelve countries. Three countries undergo slight changes of rank, as shown at the foot of Table VII, the largest change being for Israel, which is first on system A and fourth on system B.

Reasons for the Choice of a System

The reason why changing the weighting system makes little difference for mathematics is that the correlations between the national subscores for the different branches are pretty large. In Table II the average of the 21 correlations is .502, and the range is from .842 between analytical geometry and analysis to −.063 between the calculus and analysis. But the correlations between branches may well turn out to be smaller in other subjects, and perhaps much smaller. If so there will be more difference between the results of the different weighting systems. In that case, which system is to be preferred? Under A the weights awarded represent the prior judgements of the test makers. Under B the weights are equal. Under C they are determined by what happened when the tests were actually applied. The weakest candidate is plainly B. If neither the prior judgement of the test makers nor the posterior evidence from the results suggests that the weights should be equal it is hard to see any ground for making them so.

Between A and C the choice is more difficult. A marked divergence between them must mean that the curriculum in some countries differs markedly in its relative stresses from the judgement of the test makers. In mathematics the divergence was only mild. Belgium, France and the United States laid more stress than other countries on sets and logic, and less on the calculus and analysis. But the divergence was not enough to produce a serious difference in rank orders. The principal component accounted for 59% of the variation. But suppose that in another subject the principal component accounted for only 30%. In such a case there would clearly be no consensus about what the curriculum ought to be – that is, about what the student ought to have the opportunity to learn – and there might, or might not, be a large divergence between the rank orders produced by A and C. The weights in the first column of Table III would have a mean square of only 30%, and might, but more probably might not, be proportional to the numbers of items. If they were proportional the assumption of a consensus, where no consensus actually exists, would lead to the same result as the recognition of the actual facts. But this would be, as the novelists say, purely coincidental. The most important feature of the situation would be the absence of a consensus, disclosed by the relatively small size of the first latent root.

There is therefore much to be said for making a principal component analysis of the national subscores a routine part of our procedure. The prime object of this would be to show the agreement, or lack of it, between countries about what the student ought to have the opportunity of learning. For this purpose only the first component is needed. But once the work has been done to enable the computer to extract the first latent root relatively little extra computer time is needed to obtain the others. In the example in this paper the third columns in Tables III and IV were informative, and a fourth column might have been. Solving for latent roots is a very tedious process when carried out by hand, but computers thrive on tedium, so that there is something to be said for extracting at least the fourth latent root, and perhaps for pushing the process even further if a case arises where the consensus is small.

If this suggestion were adopted decisions about what should or should not be included in the tests would become less agonising. There would be no need to exclude items on the grounds that the students in some – perhaps even in most – countries had no opportunity of learning them. Items favoured by some countries only could be included, and would be given their proper weight by the posterior analysis. The incidental evidence that would emerge about the extent of the agreement or disagreement between countries would form one of the most interesting parts of the Report.

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THE ANALYSIS OF ITEM DATA FOR THE IEA MATHEMATICS TESTS

The purpose of this paper is to present two kinds of data that were obtained in connection with the IEA mathematics study and have hitherto not been published. The mathematics tests administered to students in each of the target populations studied were developed by an international committee of mathematicians, mathematics educators and test specialists and were designed to be comprehensive in their coverage. Both traditional and newer mathematics content were represented. The tests were administered to over 130,000 students in the twelve participating countries. The reliabilities of the tests, as determined through the Kuder-Richardson Formula 20, were found to be about .90 in the various countries in the four target populations with the reliabilities in a few countries around .85.

Item difficulties (proportion of students answering each test item correctly) and discrimination indices were obtained for each item in the mathematics tests in each country for each target population. The discrimination index was the point-biserial correlation between the score on the item and the score based on the remainder of the items. Rank order correlations between countries were computed for both the item difficulties and for the discrimination indices for each of the four target populations. These correlations are presented in Tables I–IV. The upper triangular matrix of each table contains the inter-country rank order correlation of item difficulties while the lower triangular matrix contains the inter-country rank order correlation for discrimination indices. The correlations were obtained in each case by ranking all the items in the test in order of difficulty, let us say, for two countries and obtaining the rank order correlation for the two countries. The same is true for the discrimination indices. A high correlation between two countries for item difficulties indicates that the set of test items was of the same *relative* difficulty in the two countries. That is, the items which were most difficult in the first country were also the most difficult in the second country while the items which were easiest in the first country were also easiest in the second country and so forth. This is *independent* of the absolute levels of difficulty. The interpretation of these correlations is another matter. The correlations for item difficulties are quite high. In fact, the median correlation for the difficulties are +.78, +.81, +.68 and +.71 in target populations 1a, 1b, 3a and 3b respectively. This can mean one of two things. First, there may be an inherent difficulty for each item such that it achieves a certain rank value in relation to other items in the test in any given country. Thus, a high rank order correlation might merely reveal this inherent difficulty. A second explanation is that mathematics curricula are rather homogeneous across countries and that the high correlations are merely reflecting a somewhat standardized curriculum. Some support can be offered for this explanation by noting that mathematics is the one subject in the curriculum which is the most logical in its development and that curriculum making has, by and large, preserved this logical progression.

TABLE I

*Inter-country Correlations of Item Difficulties and Item-remainder Point Biserial Correlations for Mathematics Tests**) *– Population 1a*

Country	1	2	3	4	5	6	7	8	9	10
1 Australia		.72	.92	.65	.63	.72	.73	.79	.70	.78
2 Belgium	.72		.71	.77	.91	.92	.83	.87	.79	.81
3 England	.83	.80		.62	.66	.74	.74	.73	.67	.69
4 Finland	.44	.45	.38		.78	.85	.74	.78	.91	.84
5 France	.62	.72	.68	.35		.85	.78	.74	.77	.73
6 Netherlands	.50	.58	.59	.21	.74		.83	.87	.85	.85
7 Japan	.56	.68	.64	.57	.35	.34		.83	.79	.78
8 Scotland	.86	.74	.89	.36	.74	.65	.36		.87	.91
9 Sweden	.70	.60	.63	.70	.44	.24	.62	.62		.90
10 United States	.83	.64	.76	.48	.48	.23	.49	.78	.75	

*) Correlations for item difficulties appear above the diagonal. Correlations for item-remainder point biserial correlations appear below the diagonal.

When one turns to specific correlations for the item difficulties, one can note a number of reassuring findings (reassuring in terms of expectations, that is) and some interesting surprises. At the 13-year-old level, the correlation between the two Scandinavian countries, Finland and Sweden, is +.91 while the correlation between Australia and England is +.92. This latter is not at all surprising for two Commonwealth countries. However, Sweden and Scotland both correlate +.90 with the United States at this level. This last finding is all the more surprising when one notes that the correlation between Scotland and England is only +.73. This would seem to indicate that there is a much higher relationship between the relative difficulties of the test items and, by extension, curricular emphases in Scotland and the United States than between Scotland and England.

The correlations for the item discrimination indices are substantially lower than

TABLE II

Inter-country Correlations of Item Difficulties and Item-remainder Point Biserial Correlations for Mathematics Tests) – Population 1b*

Country	1	2	3	4	5	6	7	8	9	10	11	12
1 Australia		.86	.93	.74	.73	.79	.74	.74	.79	.95	.83	.92
2 Belgium	.64		.88	.75	.91	.85	.85	.87	.82	.88	.77	.82
3 England	.77	.78		.72	.75	.81	.76	.78	.84	.97	.80	.86
4 Finland	.51	.48	.38		.79	.81	.84	.70	.75	.77	.92	.85
5 France	.51	.67	.63	.36		.81	.85	.86	.81	.76	.78	.75
6 Germany	.70	.67	.66	.63	.67		.87	.81	.81	.82	.84	.82
7 Netherlands	.54	.70	.67	.48	.75	.79		.83	.77	.78	.79	.78
8 Israel	.56	.69	.61	.45	.51	.66	.59		.75	.78	.71	.76
9 Japan	.56	.72	.67	.56	.34	.52	.56	.57		.81	.78	.78
10 Scotland	.73	.72	.90	.31	.76	.74	.77	.62	.56		.84	.91
11 Sweden	.77	.59	.58	.71	.42	.78	.55	.52	.60	.55		.91
12 United States	.87	.62	.72	.55	.30	.74	.48	.60	.53	.71	.75	

*) Correlations for item difficulties appear above the diagonal. Correlations for item-remainder point biserial correlations appear below the diagonal.

the correlations for item difficulties. The median correlations are +.62, +.62, +.40 and +.41 for target populations 1a, 1b, 3a and 3b respectively. From this, it would appear that the items are behaving in somewhat different ways in the various countries. This is most striking for Population 3a where the rank correlation between the discrimination indices in France and the United States is −.09. What this indicates is that how well an item discriminates in France at this level offers no guide whatsoever as to how well it will discriminate in the United States.

TABLE III

Inter-country Correlations of Item Difficulties and Item-remainder Point Biserial Correlations for Mathematics Tests) – Population 3a*

Country	1	2	3	4	5	6	7	8	9	10	11	12
1 Australia		.58	.89	.76	.63	.75	.73	.57	.73	.96	.80	.68
2 Belgium	.46		.54	.66	.71	.55	.50	.42	.66	.59	.59	.72
3 England	.61	.27		.70	.56	.77	.63	.49	.66	.88	.76	.57
4 Finland	.67	.40	.48		.70	.80	.86	.50	.82	.74	.88	.57
5 France	.40	.51	.17	.38		.63	.62	.49	.70	.59	.63	.64
6 Germany	.51	.21	.59	.57	.25		.75	.49	.68	.73	.79	.57
7 Netherlands	.40	.52	.30	.40	.39	.33		.49	.73	.69	.82	.46
8 Israel	.30	.19	.23	.28	.26	.13	.12		.51	.56	.55	.33
9 Japan	.69	.49	.41	.67	.33	.43	.33	.31		.69	.78	.62
10 Scotland	.59	.37	.64	.46	.44	.57	.30	.26	.32		.78	.69
11 Sweden	.69	.37	.49	.66	.41	.58	.43	.36	.69	.48		.52
12 United States	.54	.34	.41	.48	.09	.22	.16	.02	.43	.23	.30	

*) Correlations for item difficulties appear above the diagonal. Correlations for item-remainder point biserial correlations appear below the diagonal.

TABLE IV

Inter-country Correlations of Item Difficulties and Item-remainder Point Biserial Correlations for Mathematics Tests) – Population 3b*

Country	1	2	3	4	5	6	7	8	9	10
1 Belgium		.87	.87	.91	.87	.81	.76	.86	.73	.77
2 England	.57		.87	.76	.79	.75	.77	.96	.85	.84
3 Finland	.50	.36		.86	.79	.83	.80	.85	.81	.76
4 France	.45	.39	.37		.81	.85	.75	.77	.64	.71
5 Germany	.45	.12	.20	.28		.77	.67	.77	.71	.69
6 Netherlands	.46	.25	.45	.28	.39		.68	.77	.64	.71
7 Japan	.60	.51	.62	.39	.29	.40		.82	.67	.70
8 Scotland	.68	.83	.45	.44	.27	.45	.62		.81	.90
9 Sweden	.47	.66	.22	.39	.30	.26	.30	.60		.71
10 United States	.41	.83	.21	.47	.03	.21	.37	.73	.70	

*) Correlations for item difficulties appear above the diagonal. Correlations for item-remainder point biserial correlations appear below the diagonal.

Once the correlation matrices had been produced, it was decided to examine the data further. The original rankings of the items for the various countries were studied and items were identified that seemed to be quite stable from country to country and items that seemed to be quite variable from country to country. Unfortunately, a complete explication of the results of the analysis is beyond the bounds of this paper. Thus, the following discussion is intended only to illustrate the kind of analysis that can be made with such data and there is no intent to be definitive.

An item which was relatively easy in all countries asked students to substract the sum of $47 + 59$ from the product of 22×18. This item was, in fact, one of the five easiest of the total of seventy items in nine out of the ten countries at the 13-year-old level. It is a straightforward computational item. A second item which was rather stable was to determine the value of $-6-(-8)$. This item was stable from country to country although it was of average relative difficulty. That is, its rank value, excluding England and Australia where the item was relatively easy, ranged from 21st in Finland to 41st in Holland with most countries showing a relative position of about 30th out of the total of seventy items. Both items involved basic arithmetic processes and, while different in relative difficulty, were nonetheless stable from country to country.

By far the most interesting items were those that fluctuated widely in relative difficulty from country to country. The most dramatic item was one in which students were asked to determine the approximate product of 0.2131×0.02958. This question turned out to be the easiest item in both England and Australia while it was 52nd out of 70 in Scotland and 41st in the United States. One possible explanation might inhere in the different emphases given to the study of decimals and fractions in various countries. From observation, it would seem that a fair amount of time is devoted to the study of fractions in the United States. This would not appear to be the case in other countries. For example, an item which required students to obtain the sum of $9\,{}^{4}/_{5}$ and $13\,{}^{1}/_{4}$ was the fourth easiest item at the thirteen-year-old level in the United States while it was 49th out of 70 in France. In other countries, the relative difficulty was in the middle range. Thus, it would appear that the emphasis placed on operations with fractions in the United States results in relatively better performance on items involving fractions than on items involving decimals while in the Western European countries the case is just the opposite. This is borne out by an examination of additional items in the various tests.

It is perhaps best to leave the analysis here, since, as already mentioned, a full presentation is obviously beyond the limits of this paper. However it serves to, indicate the main features of the approach. The study of relative performances on test items in various countries furnishes one way of estimating the effects of curricula in various nations. To the extent that relative performance varies from country to country, one is in a position to identify such fluctuations and seek answers to the sources of these variations through examination of curricula and instructional procedures and material. The advantages of this approach is that it is independent of absolute levels of performance and it affords hard data as to the effect of variations in educational programs which currently are described in only general terms by observers.

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CAN LITERARY APPRECIATION BE MEASURED OBJECTIVELY?

Introduction

Now that the IEA group is engaged in an investigation of several new subject areas (Science, Reading Comprehension, Literature, Civics, French and English as foreign languages), many new problems have been encountered. Within each subject area an international committee of experts has been meeting for the last two years to devise a battery of international achievement tests in their particular field. This work is now nearing completion, although in some of the subject areas many questions are as yet unanswered.

One of the international committees, under the chairmanship of Professor Arthur W. Foshay of Columbia University, New York, has been concerned with constructing instruments to measure the understanding and appreciation of Literature. One important conclusion that they have reached is that there are no specific literary works which would form a universal content area. Neither Shakespeare nor Dante, nor indeed any other writer, can be used as a basis for test questions in *every* IEA participating country. The choice then seems to lie between allowing each participating country to devise its own set of tests, or to introduce examples of literary form which are new to all the students in the study. A common set of questions on these new pieces of literature (common in the sense that they will be the same in each country) can then be put to the students. The literary forms that were considered were poems or brief sections of prose of about 1,000 words in length. Much discussion then centred around whether to use multiple-choice or open-ended test items. The point at issue can be illustrated by an example:

a) In lines 1 to 22 John Deweck has many feelings about what he sees at the fountain. Which of the following best summarizes his feelings?
   (A) He feels that he is separated from other people and that he has lost his youth.
   (B) He feels that his heroic past has been forgotten by others.
   (C) He feels that the park is unattractive when there are people in it.
   (D) He senses that he can be understood better by people his own age.
b) How does he feel about what he sees at the fountain (lines 1 to 22)?

The first form of the question can be machine-scored objectively, reliably and cheaply. The second form requires the subjective judgement of one or more human graders and tends to be more expensive and less reliable. However, the issue of validity was raised by the Committee. Some of them believed very strongly that only the second form of the item could hope to measure the type of achievement in which they were interested. Despite the added inconvenience and expense involved, they felt that a test consisting of open-ended items was the only one that could be of real value. Of course the crucial consideration here was the definition of the achievement that the Committee wished to measure. This was difficult to specify. However, it was found to be possible to agree on the relevance of a certain type of open-ended question. It was proposed by some members of the Committee that carefully designed multiple-choice questions might measure the same dimension and that therefore these multiple choice questions might replace those of the open-ended variety in the final instrument. To test this proposal, and also to investigate some of the problems in putting together an international test of literary understanding, two small studies were carried out. These are reported below.

Poetry Study

Design. Two short poems were chosen. These were "Two at Norfolk" by Wallace Stevens, and "Ample make this bed" by Emile Dickinson. Each poem deals with the subject of death. Two tests, one in multiple-choice format and one with open-ended questions, were constructed for each poem. Each test required 45 minutes to one hour to complete. A sample of students was drawn and each took two of the tests. The first test was always on the poem "Two at Norfolk," and the second on the poem "Ample make this bed." Four pairings of tests were possible for this and they defined the four treatment groups. The data were subsequently analysed for internal consistency within the tests and correlations between tests on the two different poems.

Sample. The sample for this study consisted of 275 students aged 17 or 18. All were drawn from three English grammar schools and may be considered well above average in general ability. However, since they contained substantial numbers of Science specialists, as well as specialists in Literature, it was expected that the sample would show wide score variations on a test of Literature. Both poems were by American authors, and therefore presumably unfamiliar to most of the sample. The students were randomly divided into four treatment groups and each took two tests as outlined above.

TABLE I

Sample Size and Inter-poem Correlations

Group	Response mode Ample make this bed	Two at Norfolk	N	r
1	Open-ended	Open-ended	63	.245
2	Multiple-choice	Multiple-choice	70	.212
3	Open-ended	Multiple-choice	73	.193
4	Multiple-choice	Open-ended	69	.275

Results. The sample size and correlations between the two poems are shown in Table I, while Table II gives more general statistics for the four tests. The results for the open-ended tests are the averaged grades assigned by two independent markers. The grades for these markers related with each other to the extent of 0.96, a surprisingly high figure which suggests that a very adequate scoring scheme had been worked out beforehand. As the markers did not produce sub-scores for different parts of the test, it was not possible for these tests to estimate their internal consistency.

For the multiple-choice tests it was possible to estimate reliability using KR 20. The estimates obtained were, for "Two at Norfolk" $R = 0.54$; for "Ample make this bed" $R = 0.28$.

In general these results were rather disappointing. Although the data provided no evidence to suggest that open-ended and multiple-choice tests were measuring fundamental different aspects of ability, the uniformly low values of the correlations between the poems (whatever the form of the tests) seemed to suggest that the rankings obtained for a group of students would be very dependent upon which poem was chosen for the test. Clearly one would not, in these circumstances, wish to allow each individual country within the IEA project to nominate its own poem. To some extent these low correlations may be produced by the rather low values of the test reliabilities. In fact, if we assume that the open-ended tests had internal consistencies similar to those for the multiple-choice tests, then low correlations between poems would be very largely explained. However, in these circumstances, it might be thought that none of the tests used provided an adequate measure of literary understanding.

TABLE II

Test Statistics for Poetry

Response mode	Poem	N	Possible score	Mean score	S.D.
Open-ended	Ample make this bed	136	29	6.83	4.5
Open-ended	Two at Norfolk	132	31	8.47	4.0
Multiple-choice	Ample make this bed	139	12	8.22	1.65
Multiple-choice	Two at Norfolk	143	15	9.26	2.45

Prose Study

Design. A cross-over design similar to that employed in the poetry study was used. Two short stories, "The man by the fountain" by Georges Hebbelinck and "My childhood" by Maxim Gorki, formed the basis of both multiple-choice and open-ended tests. Each story was approximately 1,000 words in length. The tests were labelled 7, 8, 9 and 10. Each required up to one hour to complete. Students were asked to take two of the tests, one on each of the two short stories. Once again the stories were expected to be unfamiliar to the students. Four treatment groups were defined as in the previous study.

Sample. Four separate samples were drawn:

- 376 English school children drawn from one grammar and three modern schools. All were in the fourth year of secondary school with an average age of about 14 years 6 months.

- 289 English students drawn from the sixth form of a grammar school and a technical college. The mean age is 18 years.
- 338 American high school students selected from the ninth grade, and aged about 14.
- 289 students from the American twelth grade aged between 17 and 18.

(The tests had been designed and constructed for use with two populations of students, one aged 14 and the other 18). As it was soon apparent that there were considerable differences of performance between samples, no pooling of data took place and the results for each sample are reported separately. Each sample was divided randomly between the four treatment groups. The actual numbers assigned to each treatment are given in Table III.

TABLE III

Response Mode and Sample Size by Country and Age

Group	Response mode		England and Wales		USA	
	The man by the fountain	My childhood	14 yr.	18 yr.	14 yr.	18 yr.
I (7, 9)	Open-ended	Open-ended	92	66	80	66
II (8, 10)	Multiple-choice	Multiple-choice	86	78	83	80
III (7, 10)	Open-ended	Multiple-choice	90	85	86	62
IV (8, 9)	Multiple-choice	Open-ended	108	60	89	81

TABLE IV

Test Statistics for Short Stories *)

Test	Response mode	Short story	Sample		N	Mean score	S.D.
7	Open-ended	The man by the fountain	England	14 yr.	182	9.84	5.18
			England	18 yr.	151	14.80	7.46
			USA	14 yr.	166	14.36	3.99
			USA	18 yr.	128	18.30	5.77
8	Multiple-choice	My childhood	England	14 yr.	194	12.45	4.59
			England	18 yr.	138	15.91	4.45
			USA	14 yr.	172	17.40	3.26
			USA	18 yr.	161	18.37	2.88
9	Open-ended	The man by the fountain	England	14 yr.	200	11.92	6.18
			England	18 yr.	126	13.94	7.82
			USA	14 yr.	169	16.40	3.53
			USA	18 yr.	147	18.85	4.74
10	Multiple-choice	My childhood	England	14 yr.	176	11.93	4.86
			England	18 yr.	163	14.38	5.78
			USA	14 yr.	169	16.40	3.53
			USA	18 yr.	142	15.59	3.67

*) The maximum score possible on the open-ended tests is 35, and on the multiple choice tests, 23.

Results. The simple test statistics are presented in Table IV. It is interesting to note the higher average scores and lower standard deviations of the American students on each of the four tests. It will, of course, be necessary to wait for the full scale IEA study to determine if this finding holds for truly representative samples.

Although there are striking similarities in the score distributions (mean and standard deviation) of the four tests, this result must be regarded as entirely fortuitous. The maximum possible score for the open-ended tests is 35 as against 23 for the multiple choice forms.

Each of the test booklets 7 and 9 was graded by three markers. The three who completed most of the work correlated [1] 0.92, 0.93 and 0.93 with each other, which, although not as high as the value achieved in the poetry study, must be regarded as very satisfactory. One marker had to drop out before the end and was replaced for the last 25% of the scripts. The substitute marker correlated 0.88 and 0.90 with the remaining two.

On this occasion the markers produced sub-scores for different sections of the test and it was thus possible to estimate reliability through internal consistency for all four tests.[2] These estimates are given in Table V. They appear to be reasonably consistent, although there is some suggestion that reliabilities were higher in England and Wales and this is no doubt due to the greater variability of these samples.

TABLE V

Reliability Estimates

Test	Short story	Response mode	England & Wales 14 yr.	England & Wales 18 yr.	USA 14 yr.	USA 18 yr.
7	The man by the fountain	Open-ended	.69	.85	.52	.75
8	The man by the fountain	Multiple-choice	.81	.82	.68	.65
9	My childhood	Open-ended	.79	.83	.63	.62
10	My childhood	Multiple-choice	.83	.90	.74	.78

TABLE VI

Inter-text Correlations

Group	Response mode		England & Wales		USA	
	The man by the fountain	My childhood	14 yr.	18 yr.	14 yr.	18 yr.
I (7, 9)	Open-ended	Open-ended	.60	.43	.35	.41
II (8, 10)	Multiple-choice	Multiple-choice	.64	.66	.45	.75
III (7, 10)	Open-ended	Multiple-choice	.48	.50	.58	.60
IV (8, 9)	Multiple-choice	Open-ended	.46	.51	.39	.49

The correlations between the pairs of texts taken by different students are presented in Table VI. There is a clear contrast with the values obtained earlier with the poetry texts. Although in some cases these correlations are not very high, there is no evidence to suggest that the size of the correlation depends upon the style of response to either short story. "Open-ended" correlates with "open-ended" as well as "multiple-choice" with "multiple-choice," or indeed with a mixture. In Table VII these inter-text correlations have been attenuated to allow for unreliability in the two measures. The resulting figures are estimates of correlations between the tests under conditions such that each test had perfect reliability. These correlations are, of course, somewhat higher than in Table VI, but it is interesting that no clear pattern emerges. These correlations average about 0.70 which suggests that, after variance due to unreliability is removed, roughly half the remainder is shared between the tests and half is specific to individual tests.

TABLE VII

Inter-text Correlations Attenuated for Unreliability in the Two Measures [3])

Group	Response mode		England & Wales		USA	
	The man by the fountain	My childhood	14 yr.	18 yr.	14 yr.	18 yr.
I (7, 9)	Open-ended	Open-ended	.81	.52	.62	.60
II (8, 10)	Multiple-choice	Multiple-choice	.78	.70	.63	1.00
III (7, 10)	Open-ended	Multiple-choice	.62	.58	.91	.79
IV (8, 9)	Multiple-choice	Open-ended	.58	.62	.60	.77

Conclusions and Recommendations

The results presented on the preceding pages offer no evidence that multiple-choice questions *per se* measure anything different than open-ended questions *per se*. It will be recalled that this was the single most important point to be tested in these studies. Although the correlations between multiple-choice and open-ended tests are not high, they are not perceptibly lower than are correlations between multiple-choice tests themselves or between open-ended tests.

It is possible, however, to distinguish between multiple-choice and open-ended tests on financial grounds. While the multiple-choice responses were scored by computer after they had been punched on cards, the open-ended responses were submitted to expert markers. The cost of grading one open-ended script (using three markers) turned out to be about 40 cents. The computer cost per script was about one cent, to which must be added approximately 2 cents for key punching. It is clear that the multiple-choice forms of the test will prove much cheaper if large numbers of students are involved. Although in view of the high correlations between the markers relatively little reliability would have been lost by using only one marker instead of three, it would not appear possible to reduce the cost per script to much below 13 cents, which is four times the cost of scoring a script of the multiple-choice format. The high inter-marker correlation was no doubt due to the very careful briefing that the markers were given before they commenced work. They had an opportunity to examine a selection of scripts and to discuss the marking procedures in very great detail. This is rather time-consuming, of course, but it does demonstrate that with careful preparation a high inter-marker correlation could be achieved. With only one marker there would, of course, be no check on the reliability of the grades produced. The results of these two studies suggest strongly that only multiple-choice forms be used for large-scale testing in this field.

In each of the two studies here reported it would seem that at least half the non-error variance can be attributed to characteristics specific to the text under consideration. Less than half the total variance can be attributed to a general measure of ability in the literary field. This will be an obstacle to the construction of instruments designed to provide highly reliable scores of general validity. While it would be possible to construct a multiple-choice test to measure reliably the understanding of a specific short story or poem (by including a sufficiently large number of questions), a reliable measure of general ability to understand and interpret literature could only be based on responses to a wide selection of literary works. It may well prove to be a problem here, since the time taken to complete the test depends in large part upon the amount of textual material which the students has to master. The finding that we get reliabilities of about .75 from tests one hour long is frankly discouraging.

In view of the low correlations between texts, it would seem very unwise to try to compare scores made on different texts in different countries. If the IEA project is to proceed with measures in the field of literary understanding, it seems clear that the texts used must be the same in all the countries involved.

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1) These are product-moment correlations on the scores assigned by each marker; see EBEL, R. L.: "Estimations of the Reliability of Ratings," *Psychometrika*, 1951, 16.

2) The reliability of the multiple choice tests was calculated by the methods due to Kuder and Richardson, using their formula number "20." KUDER, G. F., and RICHARDSON, M. W.: "The Theory of the Estimation of Test Reliability," *Psychometrika*, 1937, 2, pp. 151–160. Each of the open-ended tests was divided into a number of different sub-tests (6 for "The man by the fountain" and 5 for "My childhood"). The total score is the sum of these sub-scores. These sub-scores and the total score are analysed to give the reliability using a method due to Hoyt. (HOYT, C. J.: "Estimation of Test Reliability for Unrestricted Scoring Methods," *Educational and Psychological Measurement*, 1951, 12). This method is analogous to that of Kuder and Richardson. A discussion of the issues involved can be found in GULLIKSEN, H.: *Theory of Mental Tests*, New York: John Wiley 1950, pp. 220–227.

3) GULLIKSEN, H.: *Op. cit.*, p. 105.

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TECHNICAL PROBLEMS OF INTERNATIONAL CO-OPERATIVE RESEARCH PROJECTS

The value of empirical educational research in providing factual unbiassed evidence to assist teachers, administrators and policy-makers in the decision-making process has been acknowledged in most countries for many years. It is only in the last few years, however, that the need to look beyond national boundaries, and so to take advantage of the wider variation that exists in the world at large, has been recognised. Although a few minor studies comparing pupil performance in two or three countries had been carried out previously, the first major endeavour in the field of empirical international research was the study reported by Foshay *et al.*1) This pilot study had as one of its main aims: "to discover the possibilities and the difficulties attending a large-scale international study," and its success demonstrated that it was not only possible to carry out such studies but that the results were meaningful and of value.

The group of researchers from the ten or so countries that participated in that first study went on to the much larger and more complex study in the field of mathematics, the results of which were published in 1967.[2]) The fact that the report of this work received wide acclaim and that its results "will occupy educators for a long time to come" [3]) should not deflect those likely to be concerned with similar investigations from the many problems and difficulties that were encountered in the IEA study. Indeed, as the authors of the Mathematics Report state:[4]) "It is a very salutary experience to look back and attempt to discover the reasons for those difficulties and mistakes which occurred and at the same time to note those measures taken which proved to be invaluable." The rest of this paper is largely concerned with a discussion of many of the problems and difficulties discovered by carrying out such an exercise.

At the outset it must be emphasised that the international research referred to is strictly that of an empirical nature and the problems to be discussed are not those which are likely to be met in descriptive studies or in "library" research. The very fact that it is empirical, however, leads directly to a major problem. At this present moment only a few countries have any tradition of empirical research in education within their own boundaries and hence in most others the number of researchers with real competence in this area is minimal. This in the normal way must present difficulties, but the problem is heightened for those countries with a philosophical tradition in education, for empirical studies find difficulty of acceptance at the national, let alone the international, level.

The lack of sufficient numbers of experienced and competent researchers in many countries has two repercussions on the organisation of research at the international level. Firstly, as will be made clear later, to be successful an international project must have an efficiently run co-ordinating centre, and to appear international such a centre should have wide international representation amongst its workers. But few of the countries likely to participate in research of this kind can spare their "competence" and hence either the central organisation will necessarily be run by competent workers from two or three countries only, or, for the sake of appearances, some less competent workers from other countries will be brought in to the probable detriment of the whole project. The view is taken in this paper that not only must problems of this nature be squarely faced, but that no solution which would in any way jeopardise the standard of work undertaken should be contemplated. Secondly, the lack of competent researchers in a country means that some considerable care must be exercised in locating those individuals who are to be responsible for the research work at the national level. Consideration of this problem leads directly to the question of how international co-operative research projects should be organised.

Experience obtained in the two-large-scale international projects already referred to suggests that the international organisation must be on a non-governmental basis. That is to say, if a co-operative research project is to be successful, it must be a joining together of competent research institutions in the various countries. These research institutions may or may not be governmental or government sponsored. What is important is that the workers in them join an international *team* that is to engage itself in the research, and for good research to be carried out, it is clearly important that they work in harmony. They are more likely to achieve this if they come together on a voluntary basis than if some of their number are "officially" appointed, and, moreover, until such time as trained and experienced researchers are generously available in all participating countries, there is less danger of some relatively incompetent workers coming into the team if they were allowed, as it were, to choose themselves. Competent researchers and a high motivation to engage in international research were considered the most important factors leading to the success of the IEA project.5)

International research differs from studies at the national level in two important practical aspects: it is necessarily on a large-scale with long lines of communication and there will be several different languages involved. Both of these factors necessitate a sound organisational structure within which the research can be administered. Whatever the subject under study, the field work – that is, the actual collection of data – must take place within each of the participating countries, but the administration and the co-ordination of the research must take place from one agreed centre. The location and staffing of this centre presents its own set of problems, one of which has already been mentioned. The need for one person to be responsible for the co-ordination and the day-to-day administration is obvious, but the recruitment of such a person, who must be both administratively and technically competent, is not easy. Other permanent central staff to assist both in the development of such tests, attitude scales and questionnaires as may be needed, and with the processing and statistical analysis of the data collected, will also be required.

It is tempting to think, in a world of fast air travel and telephonic communication, that long distances separating research institutes in different countries need not present any problems. To some extent this is true, for it is not the physical distance *per se* which creates problems so much as a failure in the established lines of communication. Clearly, the effectiveness of the co-ordination depends upon there being at all times a "central" awareness of what is happening in the "field." Failure in communication at the technical or linguistic level may result in the wrong action being taken at a given moment, or indeed in there being no action where some is required. Dependence upon voluntary co-operation at the national level increases the problems in this area and hence the recommendation that there should always be at least one full-time research officer in each national institute engaged on a particular international project. It must be noted, however, that having long lines of communication does expand the time-scale for any project. Sending tests and other documents to colleagues, for example, can take very much longer if they are sent half way around the world than if posted within national boundaries – especially if bulk necessitates surface transport.

The language problem is, of course, a real one, but not so much linguistically as technically. Languages can be readily translated for the purposes of straightforward communication, but empirical educational research has a technical language and this creates its own problems. When researchers from different countries meet, simultaneous or consecutive interpretation by expert "interpreters" is found not to be very satisfactory, since difficulties arise over the interpreters' lack of technical knowledge. Not only do they not understand and hence find difficulty in translating technical words (e.g. standard deviation, percentile), but they do not appreciate the specialised use given to many other commonly used words (e.g. reliability, validity, variance). The only satisfactory solution to this problem is to have one, or at the most, two "working" languages and to ensure that all conference participants, no matter what their native language may be, are highly proficient in them. The IEA chose English as its main working language by mutual agreement, since most of the relevant literature in this field is written in English and, probably because of this, nearly all competent researchers from whatever country speak this language. It should be added that, apart from other advantages, having only one working language avoids the very heavy international costs that would otherwise be involved in translation. French was a secondary working language for the IEA, but when it was used at conferences it was found essential to have a bilingual chairman who would be instantly aware of any misunderstandings that might arise.

A further technical problem which arises in the area of communication between international researchers is the fact that the same word – not necessarily translated – does not always convey precisely the same concept in different countries. Obvious examples are the words "comprehensive" and "vocational" when used to denote types of school. Misunderstandings easily arise when researchers think they are talking about the same thing when in fact they are not. Similar difficulties occur when attempting to translate into French the precise meanings of words like "achievement, ability and aptitude" in specific contexts. Care must always be taken to guard against possible misunderstandings, but the use of one language only, such as English, in all written communications, and the insistence that within each co-operating national institution there is the competence to cope with translation problems of this kind, will help considerably. Back translation of all tests, questionnaires, etc. is, of course, highly desirable.

The problems discussed so far have been general ones – that is, they will be present throughout any international project. There are many others, however, perhaps of a more technical nature, that occur only at specific stages. Both for the sake of clarity and in order to emphasise the overall technical aspects of international research, these problems will be considered within a general pattern. While each specific project will vary in detail, the following sequence of stages will almost certainly occur:

1. Developing the conceptual framework and research design
2. Preparing for field work a) developing measuring instruments
   b) developing sampling procedures
3. Carrying out field work a) dummy run
   b) main study
4. Processing of data
5. Writing the report.

Stage 1 – Developing the Conceptual Framework and Research Design

This is, of course, the essential first stage for any piece of research. At the international level it necessitates an initial conference at which the major purposes of the study and the specific objectives to be attained are clarified and the research design necessary to achieve those objectives developed. Ideally, the specific hypotheses to be tested should be formulated, or at least the means whereby they may be developed during the early stages of the project worked out. The need, however, to prepare a long term "work plan," together with the anticipated time table to be followed, is clearly essential, and it is at this stage that expert insight into the likely problems to be encountered is needed. The full administrative machinery for enabling the research design to be executed must be established and the problems, already mentioned, concerning the organisation and co-ordination of the research, discussed and solutions agreed. Preliminary discussions must also be held on all technical aspects, including sampling and data processing, in order to ensure that difficulties likely to be encountered are known well in advance of their occurrence. If there is any over-riding problem at this stage, it is certainly one of ensuring that the representatives from the various countries participating are sufficiently knowledgeable in the many areas which need to be considered.

Stage 2 – Preparing for Field Work

Developing measuring instruments. Whatever the study, whether it is essentially of a survey nature, or is to involve some action research, it will necessarily include the administration of some instruments designed to collect information. Whether these are cognitive achievement tests, measures of ability or aptitude, attitude scales, descriptive measures or straightforward questionnaires, it is almost certain they will have to be specifically developed for each particular project and, because of the large scale, necessarily designed for machine processing. While the principles involved in such development at the international level will not differ from those necessary on a national scale, the problems inevitably to be encountered will loom much larger. The preparation of a blueprint for an internationally valid test of achievement, for example, must be preceded by carefully conducted content analyses within each of the participating countries. International committees of subject and test experts will have to review all the items hopefully submitted by every country and prepare draft tests for try-out. The pre-testing will have to be arranged so that the item statistics obtained reflect the variations to be encountered in the participating countries. Finally, the actual test must be constructed so that it will reveal both fine differences between countries, as well as gross differences within countries.

There are also specific problems in the development of questionnaires for international use. Translation and back translation in order to ask the *same* question in two different countries is often not enough. In many cases it may be necessary first to agree on the question to be asked *in the working language*; from this to develop the preceded responses, and then allow each country to ask the question in the form appropriate to its particular circumstances, accepting only the condition that it must use the agreed international coding when transmitting the information collected for processing. The preparation of attitude scales and descriptive measures present their own crop of technical problems. Is an attitude scale, demonstrably uni-dimensional in one country, necessarily so in another? And is it measuring the same dimension? If effective instruments of this kind are to be used, such questions need answers and these can only be obtained by preliminary investigations. Certainly all instruments must be pre-tested, and if possible checks on their reliability and validity obtained.

Developing sampling procedures. If an international research project is to be at all worth while, it must be recognised at the outset that generalisations will be made from the data collected within each participating country. It is absolutely essential, therefore, that such data are obtained from fully representative samples. For all but a few countries the drawing of stratified probability samples of schools and pupils is a novel experience, and it may well be necessary, not only to give guidance in this task, but to supply some actual help in carrying out the sampling procedure. A check on the representativeness of any sample drawn within any country can be obtained by including in the data collected a number of "marker" variables for which population statistics are available.

Stage 3 – Carrying out the Field Work

Dummy run. The completion of Stage 2 should mean that all plans for the execution of the field work are ready, including techniques designed for transmitting the data collected by each national institute to an agreed processing centre, and computer programmes developed for storing the data and subsequently processing them. While stating the intention and even preparing the plans is reasonably straightforward, expecting them to be implemented without fault or error would be expecting the impossible. Problems and difficulties of all kinds will inevitably occur and two suggestions are made for reducing them. Firstly, a "mock" study can be carried out in which all aspects of the main study be executed, only on very small "judgment" samples. Such a "dummy run" serves three purposes. It gives an operational trial to all administrative and data processing procedures, hopefully enabling faults and errors to be detected and eliminated; it affords an opportunity to check on the worthiness of uncertain instruments and procedures; and it enables the researchers to examine at leisure an "example" of the results of their study and so prepare for new and better types of analyses. Secondly, at least two "briefing" meetings should be held, one before and one after the dummy run, at which the people actually to be responsible for the day-to-day work in the national institutions can discuss in detail the administrative and technical problems they encounter.

Main study. If an international study has been well planned and well co-ordinated, and its procedural faults eliminated in a "dummy run," the execution of the main field work should not present any difficulties. The problems which can be discussed at this stage, therefore, are those inherent in the fact that the educational systems of the world differ considerably; school years start and end at different times; schooling starts and finishes at different ages; and promotion policies both within and between schools vary considerably. At any point the educational characteristics of quite similar pupils from different countries show an enormous variation. And this presents problems for which often no real solution exists and the best compromises have to be accepted. To cite but two: are target populations to be defined in terms of grade, with consequent variations in pupil age, or in terms of age, with pupils spread over many grades? should pupil data be collected at the end of school years, thus complicating the data collection and processing, or at the same point in time which means that the pupils in different countries will be at different stages in their school year?

Stage 4 – Processing the Data

The overall plan for data processing must, of course, be drawn up at an early stage in any study. So rapidly do computer techniques change these days, however, that it is wise to maintain as much flexibility as possible. Although it is desirable to establish a main computation centre, the arrangements made should allow for transferring the processing to an alternative site should circumstances necessitate this.

Mention has already been made of the desirability of examining at leisure the first results of a study. When information is being collected on a very large number of variables from many countries, the practice of obtaining a full set of univariates and sending these for careful examination to each national institute is certainly to be recommended. Only when these have been checked against known or expected values should any further analyses on the data be carried out. While it is to be hoped that most faults in the data collection and processing systems will have been eliminated at the dummy run stage, the possibilities of error must always be reckoned with, and care in the early examination of data can save a great deal of time and trouble later on.

Stage 5 – Writing the Report

This is a very important stage and not one to be neglected in the planning of any international study. It must be supposed that most of the researchers taking part will want to participate in the writing and this presents the problem of how this task is to be partitioned. One or two will amicably accept the chores of writing the sections describing the study and its aims and procedures, and one useful suggestion for dealing with the results is to allocate hypotheses to researchers according to their specific interests. The report must, initially at least, be written in the one main working language and by no means all the researchers will be proficient in writing in it. The task of editing is therefore a major one and both linguistic and technical competence is essential for anyone undertaking it.

A brief review of the problems to be encountered in international co-operative research must necessarily appear sketchy. Experience has suggested the problem areas, but the details are dependent upon the circumstances that will be operative in particular projects. None of the countries participating in the IEA study could be said to be underdeveloped. Undoubtedly, additional problems will arise in studies in which such countries predominate. One general conclusion can, however, be drawn: The greater the technical competence among the researchers and the more readily they team up as colleagues and forget their international status, the fewer will be the problems and the more readily will those that exist be solved.

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FORTHCOMING ISSUE

The next number of the Review will be a Special Number and entirely devoted to the theme

WAYS OF INCREASING CHILDREN'S PARTICIPATION IN CLASS

The editor of the number is Wincenty Okoń, Warsaw. Among the contributions will be:

M. SKATKIN, USSR	L'indépendance de la pensée des écoliers
W. OKOŃ, Poland	Heuristic Learning and Programmed Learning
E. MEYER, Fed. Rep. of Germany	Gruppendynamische Verfahren zur Optimierung des Lehr- und Lernprozesses
W. D. WILLIAMS, England	Instructional Agents as Transmitters of Research Findings

These titles are as yet only provisional and may be altered before publication.

The Editorial Board wishes to acknowledge with thanks the help of Dr. G. Hausmann, Professor of Comparative Education, Hamburg University, on this number.

OBITUARY

It is with deep regret that the Editors of the *International Review of Education* inform readers of the death of

FRANZ HILKER and NICHOLAS HANS

two of its best-loved and respected contributors.

*

Dr. Franz Hilker was born in April 1881 and died in January 1969. He was known to a wide circle of educationists for his work in Comparative and International Education.

His book *Vergleichende Pädagogik*, published in 1942, was the outcome of work in this field, undertaken by him between 1920 and 1933 and again from 1945 to 1960.

A man of calm disposition and wise advice, Hilker is well known for his work in the Documentation Centre in Bonn, and for his editorship of the periodical *Bildung und Erziehung*. He may be regarded, together with Friedrich Schneider, as one of the founder comparative educators in the Federal Republic of Germany. He was a Founder Member of the Comparative Education Society in Europe, and added much during the last years of his life to the deliberations and conferences of the Society. His knowledge of education in Russia, the Low Countries and England was extensive. He wrote frequently on these and other systems of education as well as on the theory of General Education. His contributions to many educational journals as well as to such publications as the Unesco *World Survey of Education* will be sadly missed.

*

Dr. Nicholas Hans died in May 1969 after a long illness. He was born in September 1888 in Russia, and studied both there and in Germany. His work during the 1920's with Sergius Hessen gained him a reputation in the field of Comparative Education which was enhanced by his many contributions to the *Yearbook of Education* during the 1930's and again after the Second World War as Joint Editor from 1947 to 1953.

In 1948 he became Reader in Comparative Education at Kings College London. He worked closely with the London Institute of Education, Department of Comparative Education, and the lectures he gave there were collected in his world famous book *Comparative Education* published in 1949.

This standard textbook, and his voluminous writings including *New Trends in Education*, and *The Russian Tradition in Education* made him a pioneer who shaped the minds and outlooks of successive generations of Comparative Education students.

As a lecturer he was superb. As a colleague he offered through his ideas instant and challenging stimulation.

*

Friends and colleagues will always remember Franz Hilker and Nicholas Hans.

Our sympathy goes out to the widows and families, and our hope is that they will find some comfort in the fact that both men were respected and liked throughout the world as scholars devoted to the development of Comparative and International Education.

THE EDITORIAL BOARD

GRUNDSCHULREFORM IN DER UDSSR
MOTIVE UND PROBLEME *)

von BERNHARD SCHIFF, Walsrode

I. Voraussetzungen

1. Motive der Reform

1968 konnte die sowjetische Schule auf ein bewegtes Jahrzehnt ihrer Geschichte zurückblicken. In diesen zehn Jahren waren im Schulwesen der Sowjetunion so viele Veränderungen vorgenommen worden, daß man von diesem Zeitabschnitt als einem Jahrzehnt der Reformen sprechen kann. Nach der Verabschiedung des Gesetzes *Über die Festigung der Verbindung der Schule mit dem Leben und über die weitere Entwicklung des Volksbildungssystems in der UdSSR* (1958) [1]) und seiner Revision im Jahre 1964,[2]) die u.a. eine Verkürzung der Gesamtschulzeit von 11 auf 10 Jahre brachte, wurde im November 1966 in einer von Partei und Regierung gemeinsam erlassenen Verordnung die Einführung der allgemeinen zehnjährigen Schulbildung im Jahre 1970 verkündet.[3]) Der letzten Maßnahme ging im Herbst 1964 die Gründung einer zentralen Lehrplankommission voraus, der über 500 namhafte Fachgelehrte und Pädagogen angehörten.[4]) Die Kommission sollte eine grundlegende Revision der Schullehrpläne vornehmen.

Die bis 1966 erfolgten Veränderungen betrafen in erster Linie die Sekundarschule. Erst die 1964 eingesetzte Lehrplankommission bezog die Grundschule in ihre Reformpläne ein, indem sie vorschlug, die Dauer des Grundschulunterrichts von vier auf drei Jahre zu verkürzen. Dieser Vorschlag wurde als verbindliche Richtlinie in die Partei- und Regierungsverordnung vom November 1966 aufgenommen.

Die Einbeziehung der Grundschule in das Konzept der sowjetischen Schulreform entsprach der zu beobachtenden internationalen Tendenz zur Aufwertung der Grundschulpädagogik. So erschien z.B. 1967 in Großbritannien der sogenannte *Plowden Report*, der die Ergebnisse umfangreicher Untersuchungen zur Situation der englischen *primary school* brachte und auch Empfehlungen zur Neuorientierung des Unterrichts dieser Schulstufe enthielt;5) in den USA wurde eine Reihe von Projekten auf dem Gebiet des Grundschulunterrichts in Angriff genommen, die vor allem die Neugestaltung des Mathematik- und Sachunterrichts in der *elementary school* zum Ziel hatten; in der Bundesrepublik Deutschland wurde in Frankfurt am Main ein "Arbeitskreis Grundschule e.V." gegründet und erstmals eine ausschließlich den Fragen der Grundschulpädagogik gewidmete Zeitschrift herausgebracht.6)

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*) Der vorliegende Beitrag entstand im Zusammenhang mit der Mitarbeit des Verfassers an dem unter Leitung von Prof. Dr. Oskar Anweiler, Ruhr-Universität Bochum, stehenden Forschungsprojekt "Geistige und sozialökonomische Wandlungen in Osteuropa und ihr Einfluß auf das Bildungswesen und die Jugenderziehung", das von der Stiftung Volkswagenwerk getragen wird.

Die russischen Texte wurden vom Verfasser, soweit nicht anders angegeben, ins Deutsche übersetzt. Die Transkription der russischen Wörter erfolgt grundsätzlich nach der wissenschaftlichen Umschrift der preußischen Bibliotheken. Nur bei einigen eingebürgerten Ausdrücken und geographischen Namen (z.B. Sowjet; Nowosibirsk) wurde die eingedeutschte Schreibweise verwendet.

Die Abkürzungen bedeuten: APN = Akademie der pädagogischen Wissenschaften; M = Moskau; RSFSR = Russische Sozialistische Föderative Sowjetrepublik.

Die Grundschule (*načal'naja škola*) umfaßt in der Sowjetunion die ersten vier Schuljahre.

So stellt das in der Sowjetunion aufgetretene Interesse an einer Reform des Grundschulunterrichts keine isolierte Erscheinung dar. Die einsetzende kritische Überprüfung der Inhalte und Methoden des Grundschulunterrichts, ja, der gesamten Bildungskonzeption der Grundschule, steht im Zeichen der Suche nach einem effektiveren Bildungssystem, das auf die steigenden Anforderungen der industriellen Gesellschaft an die Schule mit einer Leistungssteigerung zu reagieren vermag. Die Hoffnungen, die man dabei auf die Grundschule setzt, werden häufig mit der Tatsache begründet, daß der Hauptteil des intellektuellen Wachstums des Kindes in die Vor- und die Grundschulzeit fällt.

In der Sowjetunion wird die Notwendigkeit einer Reform des Grundschulunterrichts u.a. mit dem Vorhandensein großer Bildungsreserven in der Grundschule begründet. Dabei hat man jedoch weniger das intellektuelle Entwicklungspotential des Grundschulkindes als den geringen kognitiven Gehalt der Grundschullehrpläne im Auge. Ein weiterer Grund der Reform wird in den strukturellen Veränderungen des sowjetischen Bildungswesens gesehen, die der Grundschule eine neue Funktion im Gesamtsystem der Bildungseinrichtungen zuweisen. Auch der Umstand, daß die Umwelt des Kindes – und mit ihr auch das Kind selbst – sich zunehmend verändert, wird häufig zur Begründung der Notwendigkeit einer Grundschulreform herangezogen.

Außer diesen, im pädagogischen Gespräch deutlich artikulierten Motivationen gibt es eine Reihe weiterer Triebkräfte verschiedener Art, die auf eine Umgestaltung der Grundschule in der Sowjetunion hinwirken. Unter ihnen können in grober Einteilung zwei Gruppen unterschieden werden.

Die eine von ihnen umfaßt alle Reformantriebe, die ihren Ursprung in der Diskrepanz zwischen der historisch geformten Gestalt und Bildungskonzeption der sowjetischen Grundschule und den veränderten Anforderungen an sie haben. Entscheidend in diesem Zusammenhang ist der Umstand, daß die im Zuge der Anpassung erstrebten Veränderungen der

Grundschulkonzeption durch die unmittelbaren Ziele der Anpassung begrenzt werden.

Die zweite Gruppe vereinigt die aus dem Raum der pädagogischen Forschung stammenden Reformimpulse. Sie entspringen der kritischen Überprüfung der Bildungskonzeption der Grundschule und sind in ihrer Zielsetzung nicht durch das bloße Anpassungsbedürfnis begrenzt. Die pädagogische Forschung vermag neue Theorien der Grundschulbildung zu konzipieren, die über das Maß der notwendigen Anpassung hinaus wirksam sein können.

Auf der Ebene konkreter Reformprobleme lassen sich die Wirkungsbereiche der beiden Antriebsgruppen kaum voneinander trennen. Sie begegnen sich vor allem dort, wo im Zuge der Anpassung pädagogische Probleme aktualisiert und zum Gegenstand wissenschaftlicher Forschung gemacht werden.

Der Rahmen dieses Beitrages erlaubt es nicht, die durch die Grundschulreform aktualisierte pädagogische Problematik in vollem Umfang darzustellen. Statt dessen soll versucht werden, am Beispiel eines größeren Forschungsvorhabens Probleme der pädagogischen Forschung und ihre Auswirkungen über die ursprünglich gesetzten Ziele hinaus nachzuweisen. Zuvor seien jedoch in einem kurzen Rückblick auf die Entwicklungsgeschichte der sowjetischen Grundschule einige Ursachen für die Notwendigkeit ihrer Anpassung an die bestehende Schulsituation aufgezeigt.

2. *Entwicklung und Situation der sowjetischen Grundschule*

Nach der russischen Revolution von 1917 bildete die Alphabetisierung der Bevölkerung, die zu nahezu zwei Dritteln aus Analphabeten bestand, neben der ideologischen Umerziehung die wichtigste Aufgabe der Bildungspolitik der Sowjetregierung. Dieser Tatsache ist es zu verdanken, daß der Ausbau des Grundschulwesens in den ersten anderthalb Jahrzehnten nach der Revolution Vorrang vor anderen Bildungsaufgaben hatte.

Im Gegensatz zum Sekundarschulwesen, wo an die Stelle der bestandenen Vertikalgliederung die Konzeption der den neuen gesellschaftspolitischen Vorstellungen entsprechenden Einheits-Arbeitsschule getreten war, übernahm man im Bereich der Grundschule die wesentlichen Züge des vorrevolutionären Modells. Die Grundschule blieb – trotz ihrer Einbeziehung in das Schema der Einheitsschule – *de facto* in der Mehrzahl der Fälle eine autonome Bildungsanstalt, die ihren Schülern eine abgeschlossene Elementarbildung "für das Leben" zu vermitteln hatte.

Trotz des verstärkten Ausbaus des Grundschulwesens in der nachrevolutionären Periode konnte die allgemeine vierjährige Grundschulpflicht erst 1934 eingeführt werden.[7]) Die Grundschule wurde damit zu der vorerst einzigen Pflichtschule der Sowjetunion und blieb es bis zur 1951 vorgenommenen Verlängerung der Schulpflicht auf sieben Jahre.[8])

Die didaktische und unterrichtsmethodische Konzeption der Grundschule erfuhr ihre Ausprägung in den dazwischenliegenden Jahrzehnten. Das Bildungsziel bestand in erster Linie im Erwerb der Fertigkeiten im Lesen, Rechnen und im schriftlichen Gebrauch der Muttersprache; daneben wurde den Schülern ein elementares Realienwissen vermittelt, einschließlich der Kenntnisse der Geographie und der jüngsten Geschichte der UdSSR. Die Grundschulbildung war noch am Vorabend der Reform von dieser Zielsetzung bestimmt.

Nach der Einführung der siebenjährigen Schulpflicht hat sich die Funktion der Grundschule innerhalb des Gesamtschulsystems grundlegend gewandelt. Da alle Kinder nach ihrem Abschluß die Schule weiter besuchen, ist sie faktisch zur Unterstufe der seit 1958 obligatorischen Achtjahresschule geworden. Ihre didaktische Integration in das übergreifende Schulsystem steht jedoch noch aus und soll im Zuge der eingeleiteten Reform versucht werden.

Neben der aufgezeigten generellen Notwendigkeit einer Anpassung an die veränderte Situation gibt es weitere Probleme, die im Sinne einer Angleichung an die neuen Gegebenheiten gelöst werden müssen. Z.B. ist eines davon dadurch entstanden, daß immer mehr Kinder vor ihrem Schuleintritt einen Kindergarten besuchen,[9]) wo ihnen oft die ersten Fertigkeiten im Lesen und Rechnen bereits vermittelt werden. Da der Kindergarten jedoch weder organisatorisch noch didaktisch mit der Schule verbunden ist, nehmen die Grundschullehrpläne keine Rücksicht auf die im Kindergarten geförderten Kinder. Ihre Zusammenfassung in besonderen Gruppen wird wegen des in der sowjetischen Pädagogik vertretenen Prinzips der Gleichheit und Einheitlichkeit der Schulbildung grundsätzlich abgelehnt. Eine Lösung dieses Problems, die eine optimale Förderung dieser Kinder sichern würde, steht noch aus.

Ein weiterer korrekturbedürftiger Umstand ist die traditionell relativ späte Einschulung der Kinder, die in der Sowjetunion erst nach Vollendung des siebenten Lebensjahres in die Schule aufgenommen werden. Die Frage der Zweckmäßigkeit dieser Regelung wird unter dem Aspekt der angestrebten Ausnutzung der Bildungsreserven aktuell. Versuche mit dem Unterricht sechsjähriger Kinder in vielen Gebieten der Sowjetunion zeugen davon, daß man dieses Problem erkannt hat und nach seiner Lösung sucht.

Über die Tatsache, daß die Entwicklung der Grundschule hinter der des übrigen Bildungswesens zurückgeblieben war, bestand am Vorabend der Reform kein Zweifel. In einem Bericht über zwei Tagungen des Präsidiums der APN im Jahre 1964, die der grundschulpädagogischen Forschung gewidmet waren, heißt es z.B.:

> "Die Referenten waren sich darin einig, daß die Grundschulbildung hinter den Anforderungen des Lebens zurückbleibt und einer grundlegenden Umgestaltung bedarf. Die Zeit ist reif, den Inhalt und das System der Grundschulbildung im Lichte des gegenwärtigen wissenschaftlichen und technischen Fortschritts und der ideologischen Erziehungsaufgaben sowie unter Berücksichtigung der Veränderungen in der Psyche und der Erfahrung des Kindes ernsthaft und fundamental zu überprüfen." [10])

Diese Feststellung ließe sich durch eine Reihe von ähnlichen Aussagen kompetenter sowjetischer Fachleute bekräftigen.

3. *Die Organisation der pädagogischen Forschung und ihre Bedeutung für die Grundschulreform*

Die in der Sowjetunion begonnene Grundschulreform war, im Unterschied zu Reformversuchen in anderen Bereichen der Schule, durch vorausgegangene langjährige pädagogische Forschungen gründlich vorbereitet. In diesem Zusammenhang muß die bahnbrechende Bedeutung der vom Laboratorium für Erziehung und Entwicklung der APN unter der Leitung von L. V. Zankov systematisch durchgeführten experimentellen Untersuchungen für die Reform der Grundschule hervorgehoben werden.

Zankov und seinen Mitarbeitern gelang der Nachweis, daß es möglich ist, durch Umstellung des Grundschulunterrichts auf neue, die geistige und psychische Entwicklung des Kindes gezielt fördernde didaktische Grundlagen die Unterrichtsziele früher als bisher zu erreichen. Die positiven Ergebnisse ihrer Schulversuche lieferten den Befürwortern einer Verkürzung des Grundschulkurses in der Diskussion der Grundschulreform wissenschaftlich begründete Argumente.

Neben dem von Zankov geleiteten Laboratorium arbeiten in der UdSSR mehrere weitere Forschergruppen an der Lösung grundschulpädagogischer Probleme. Die in der Mehrzahl empirisch angelegten Untersuchungen werden in der Regel von speziellen Forschungseinrichtungen durchgeführt. Oft übernehmen aber auch Lehrstühle größerer Hochschulen – trotz der bestehenden Trennung von Forschung und Lehre – die Durchführung bestimmter pädagogischer Forschungsvorhaben.

Den Mittelpunkt der pädagogischen Forschung in der Sowjetunion bildet die 1943 gegründete Akademie der pädagogischen Wissenschaften. Sie war bis 1966 dem Ministerium für das Bildungswesen der RSFSR unterstellt, besaß jedoch bereits seit ihrer Gründung die Funktion der zentralen pädagogischen Forschungsstelle der Union. 1966 wurde sie in

APN der UdSSR umbenannt und dem gleichzeitig gegründeten Ministerium für das Bildungswesen der UdSSR unterstellt.[11])

Die Forschungseinrichtungen der APN bestehen aus zehn wissenschaftlichen Forschungsinstituten, die in kleinere Abteilungen oder Laboratorien unterteilt sind. Außer der APN mit ihrer dominierenden Stellung und koordinierenden Funktion besitzt jede Unionsrepublik ein eigenes wissenschaftliches Forschungsinstitut für Pädagogik oder ein wissenschaftliches Forschungsinstitut für Schulfragen. Die letzteren sind in der Regel kleiner und in ihrer Unterteilung weniger differenziert als die Forschungsinstitute für Pädagogik.

Außerdem gibt es in der UdSSR drei Forschungsinstitute für Psychologie, die entweder besondere Abteilungen zur Erforschung von Problemen der pädagogischen Psychologie oder der Kinderpsychologie besitzen oder aber, wie das in die APN integrierte Institut für Psychologie in Moskau, sich in erster Linie mit der Untersuchung pädagogischer Probleme befassen.

Die meisten pädagogischen und psychologischen Forschungseinrichtungen besitzen spezielle Abteilungen für Grundschulpädagogik. In einer Reihe der republikeigenen Institute und in drei Abteilungen der APN [12]) werden Probleme der Grundschuldidaktik und der Reform des Grundschulunterrichts in besonderen Vorhaben erforscht.

Oft bleibt die Wirksamkeit der einzelnen Forschungsarbeiten nicht auf den unmittelbar zu untersuchenden Bereich begrenzt, sondern wirft neue Probleme auf, die zum Gegenstand der Diskussion werden. Im folgenden sollen solche Auswirkungen am Beispiel des vom Laboratorium für Erziehung und Entwicklung der APN unter der Leitung von L. V. Zankov durchgeführten Forschungsvorhabens "Unterricht und Entwicklung" aufgezeigt werden.

II. Das Forschungsvorhaben "Unterricht und Entwicklung"

Zankov und seine Mitarbeiter begannen bereits 1952 mit der Durchführung "didaktischer Experimente." [13]) Sie gründeten zu diesem Zweck im Rahmen der APN-Arbeit in einer Moskauer Schule das *Laboratorium für experimentelle Didaktik*. 1957 begannen sie mit der Untersuchung der Wechselbeziehungen zwischen dem Schulunterricht und der geistig-seelischen Entwicklung des Kindes. Die empirische Arbeit an diesem Problem wurde im September 1957 (Schuljahrsbeginn) mit einer ersten Klasse in Moskau begonnen. 1960 wurde das Laboratorium, das sich seitdem ausschließlich der Untersuchung dieses Problems widmet, in *Laboratorium für Erziehung und Entwicklung* umbenannt.

Der erste Schulversuch dauerte vier Jahre. Nach seinem Abschluß erfüllten die Kinder nicht nur die Anforderungen des Grundschullehrplanes, sondern eigneten sich darüber hinaus einen großen Teil des Unterrichtsstoffes des 5. Schuljahres an; in einzelnen Schulfächern wurden sogar die Lehrplananforderungen des 5. Schuljahres voll erfüllt. Das Laboratorium entwickelte daraufhin neue Lehrpläne für einen dreijährigen Grundschulkurs, nach denen die Versuchsklassen weiterhin unterrichtet wurden.

Der Schulversuch wurde im Schuljahr 1961/62 auf eine breitere empirische Basis gestellt und in zehn ersten Klassen der Stadt Kalinin wiederholt. 1962/63 kamen zwanzig weitere erste Klassen in den Städten Kalinin und Tula hinzu; der experimentelle Unterricht in den zehn zweiten Klassen wurde fortgesetzt.14)

In den folgenden Jahren wurde die empirische Grundlage des Versuchs laufend erweitert: Im Schuljahr 1963/64 kamen 57 erste Klassen hinzu; 1964/65 – 291 weitere erste Klassen; 1965/66 waren insgesamt 1024 Schulklassen in verschiedenen Gebieten der RSFSR – darunter auch in einigen autonomen Nationalitäten-Republiken – an dem Versuch beteiligt, unter ihnen 676 erste, 291 zweite und 57 dritte Klassen. Außerdem nahmen am Schulversuch über 100 Schulklassen in verschiedenen Unionsrepubliken teil.15)

Im Schuljahr 1965/66 wurden die am Schulversuch beteiligten Schulanfänger bereits nach speziellen, vom Laboratorium herausgegebenen Lehrbüchern unterrichtet. Inzwischen erschien eine experimentelle Lehrbuchserie für alle drei Grundschuljahre. Das Laboratorium verfügt über eine Sammlung empirischer Daten, die ausgewertet werden, darunter über Aufzeichnungen des individuellen Entwicklungsverlaufs von 1300 Schülern aus den Schulen in Moskau, Kalinin, Tula und Nowosibirsk.

1. Die theoretischen Grundlagen des Forschungsvorhabens

Das Problem der Wechselbeziehungen zwischen dem Unterricht und der geistig-seelischen Entwicklung des Schülers wurde von Zankov nicht zufällig in den Mittelpunkt der Forschungsarbeit seines Laboratoriums gestellt. In den Jahren 1956–58 fand in der Sowjetunion eine Diskussion dieses Problems statt, an der sich viele namhafte Psychologen und Pädagogen beteiligten.16) Die Frage nach dem Zusammenhang zwischen dem Unterricht und der Entwicklung des Kindes blieb seitdem in der UdSSR im Blickfeld der pädagogischen Forschung. Auch im internationalen Gespräch findet dieses Thema zunehmende Beachtung. 1966 wurde es auf dem XVIII. internationalen Psychologen-Kongreß in Moskau in einer von J. Bruner (USA) und N. A. Menčinskaja (UdSSR) geleiteten Sektion erneut diskutiert.

Ein problemgeschichtlicher Rückblick zeigt, daß die Frage nach dem

Wesen der Beziehungen zwischen dem Schulunterricht und der psychischen Entwicklung des Kindes im nachrevolutionären Rußland in ihrer noch heute gültigen Formulierung des Psychologen L. S. Vygotskij (1896–1934) gestellt wurde. Vygotskij begründete seine Auffassung von der "führenden Rolle" des Unterrichts gegenüber der Entwicklung des Kindes mit seiner Theorie von den zwei aufeinanderfolgenden Stufen der psychischen Entwicklung, die er als das "aktuelle Niveau" und die "Zone der nächsten Entwicklung" bezeichnete.

Im Bereich des aktuellen Niveaus liegen die ausgereiften psychischen Funktionen, die das Kind befähigen, bestimmte Aufgaben selbständig zu lösen. Die Zone der nächsten Entwicklung umfaßt dagegen die Funktionen, die sich im "Stadium der Reifung" befinden. Die Aufgabe des Unterrichts besteht nach Vygotskij darin, diese Funktionen zu entfalten und sie auf das Niveau der aktuellen Entwicklung zu heben. Der Unterricht solle sich zur Entwicklung wie die Zone der nächsten Entwicklung zu ihrem aktuellen Niveau verhalten:

> "Das Lernen ist nur dann gut, wenn es Schrittmacher der Entwicklung ist. Dann werden dadurch eine ganze Reihe von Funktionen, die sich im Stadium der Reifung befinden und in der Zone der nächsten Entwicklung liegen, geweckt und ins Leben gerufen. Und eben darin besteht die wichtigste Bedeutung des Lernens für die Entwicklung." 17)

Das Kind könne die in der Zone der nächsten Entwicklung liegenden Funktionen noch nicht selbständig ausüben. Hingegen sei es dazu in der Lage, wenn es den Erwachsenen nachahmt oder von ihm angeleitet wird. Von dieser These ausgehend, begründete Vygotskij die in der sowjetischen Psychologie und Pädagogik häufig zitierte "führende Rolle des Erwachsenen im Unterrichtsprozeß."

Die theoretische Grundlage der didaktischen Experimente des Laboratoriums für Erziehung und Entwicklung bildete die "Zwei-Zonen-Theorie" Vygotskijs. Zankov schrieb darüber:

> "Beim Aufbau des Unterrichtsprozesses in unserer Versuchsklasse gehen wir von den Thesen Vygotskijs aus und bauen diesen Prozeß so auf, daß der Unterricht der Entwicklung vorausgeht und auf diese Weise das optimale Ergebnis in der Förderung der psychischen Entwicklung erreicht wird. Wir sind uns gleichzeitig darüber im klaren, daß der Begriff der Reifung im vorliegenden Zusammenhang eher einen Arbeitsterminus als einen wissenschaftlichen Begriff darstellt, der das Wesen des Prozesses aufdeckt." 18)

Zankov distanziert sich jedoch von der Auffassung Vygotskijs über die führende Rolle des Erwachsenen im Unterrichtsprozeß:

> "Die konkrete Aufgabe des Unterrichts besteht nicht nur darin, daß der Erwachsene dem Kind bei seiner intellektuellen Tätigkeit durch hinlenkende Fragen, durch Beispiele hilft, und das Kind den Erwachsenen nachahmt. Der Pädagoge kann z.B. auch das Material, mit dem das Kind zu tun hat, auf eine bestimmte Weise organisieren. In diesem Fall hilft er dem Kind nicht und überläßt die Ausführung der Aufgabe ganz dessen selbständigen Bemühungen. Die Nachahmung ist dabei völlig ausgeschlossen. Indessen bewegt sich das Kind auf dem Gebiet dieser oder jener psychischen Tätigkeit vorwärts, indem es die ihm gestellten Aufgaben selbständig löst." 19)

Auch in der Frage nach der Effektivität der Unterrichtsmethode für die Förderung der geistig-seelischen Entwicklung des Kindes ergänzt Zankov die Konzeption Vygotskijs:

> "Während L. S. Vygotskij die Bedeutung des Unterrichts für die Formung der noch nicht ausgebildeten psychischen Funktionen der Kinder richtig unterstrich, ließ er die Tatsache unbeachtet, daß das Ergebnis der Entwicklung der Schüler stark variieren kann, je nachdem wie der Unterricht aufgebaut wurde." 20)

Zankov betont den pädagogischen Charakter seiner Untersuchungen gegenüber den psychologisch motivierten Thesen Vygotskijs. Die pädagogische Zielsetzung führe ihn zu anderen Fragestellungen:

> "Wir stützen uns auf die Thesen L. S. Vygotskijs, nach denen die Entwicklung der kindlichen Psyche soziale Grundlagen hat, und der Unterricht die Entwicklung nur dann effektiv fördert, wenn er der Entwicklung vorauseilt. Unsere Untersuchung ist jedoch eine pädagogische: Die Aufdeckung des Wesens der objektiven Beziehung zwischen dem Unterricht und dem Verlauf der allgemeinen Entwicklung der Schüler setzt eine Antwort auf die Frage voraus, welcher Aufbau des Unterrichts die allgemeine Entwicklung der Kinder mit hoher Effektivität fördert." 21)

2. *Kritik an der bestehenden didaktischen Konzeption*

Die Ausrichtung des Unterrichts auf ein neues Ziel setzt den Entwurf einer neuen Didaktik voraus, die sich mit der geltenden didaktischen Konzeption auseinandersetzen muß. In der Tat führten die von Zankov aufgestellten und in den Schulversuchen überprüften didaktischen Thesen in der Sowjetunion zu einer Diskussion didaktischer Grundfragen. Der Beitrag Zankovs und seiner Mitarbeiter zur Reform des Grundschulunterrichts muß daher im Zusammenhang dieser Diskussion gesehen werden.22)

Diese Diskussion wurde mit der Veröffentlichung zweier Zeitschriftenaufsätze Zankovs in den Jahren 1962/63 eingeleitet.23) Er stellte in ihnen seine didaktischen Thesen vor und kritisierte gleichzeitig die in der sowjetischen Pädagogik allgemein anerkannte didaktische Konzeption.

Das formale Gerüst dieser herkömmlichen Didaktik wird von den sogenannten "didaktischen Prinzipien" und Regeln gebildet, die als weitgehend allgemeingültig verstanden werden. Sie sollen in den Teil- oder Fachdidaktiken – die oft auch als Methodiken bezeichnet werden – realisiert werden.

Zankovs Kritik richtete sich gegen einige theoretische Positionen der herkömmlichen Didaktik, gegen die Methoden der didaktischen Forschung und gegen die Theorie und Praxis des Grundschulunterrichts. Die Kritik der theoretischen Positionen betraf vor allem das erstarrte System der traditionellen Didaktik. Zankov schrieb z.B.:

> "... man darf nicht die Augen davor verschließen, daß die Prinzipien, Regeln, Forderungen der sowjetischen Didaktik zu ihrem größeren Teil der alten Didaktik entliehen sind; sie stellen keine Ergebnisse wissenschaftlicher Forschung dar, wie sie heute verstanden wird, d.h. der Forschung, die sich auf zuverlässige Daten, auf das Experiment gründet. Dies bedeutet nicht, daß die genannten Thesen in Bausch und Bogen abzulehnen sind. Man darf sie jedoch nicht zu einem Dogma, zu unerschütterlichen absoluten Wahrheiten machen." 24)

Das Unvermögen der traditionellen Didaktik, eine den neuen Aufgaben der sowjetischen Schule angemessene didaktische Konzeption zu entwickeln, ist nach Zankovs Meinung auf ihre falschen methodologischen Voraussetzungen zurückzuführen. Die Ursachen dafür seien in erster Linie:

> "... der Konservativismus bei der Erarbeitung didaktischer Fragen, unrichtige Auffassung von den Aufgaben und dem Gegenstand der Didaktik, Primitivität der Forschungsmethodik. Der Konservativismus äußert sich darin, daß die zu untersuchenden Erscheinungen des Schullebens in das Prokrustesbett der immer gleichen didaktischen Prinzipien, Regeln, Begriffe der Vergangenheit gezwängt werden." 25)

Die didaktische Forschung löse Zankov zufolge ihre Aufgaben "zu allgemein," mit theoretischen Mitteln, ohne die pädagogische Wirklichkeit empirisch zu untersuchen. Dieser Zustand sei an erster Stelle dafür verantwortlich, daß der Grundschulunterricht in der sowjetischen Schule den neuen Anforderungen an die Bildung des Menschen nicht genügen kann.

Zankov weist anhand empirischer Untersuchungen nach, daß der herkömmliche Grundschulunterricht die intellektuelle Entwicklung der Schüler nicht genügend fördert, ja, zuweilen sogar hemmt. Auf den Zusammenhang zwischen dem Unterricht und der Entwicklung eingehend, stellt er fest:

> "Für die heute geltende Methodik des Grundschulunterrichts ist bei der Beantwortung dieser Frage folgende Einstellung charakteristisch: Unterrichtet man das Kind, so wird dadurch seine Entwicklung gefördert.26) ... Die Tatsachen sprechen

jedoch eine andere Sprache. Unsere Beobachtungen und speziellen Untersuchungen, durchgeführt an den Schulen in Moskau und den entlegenen Gebieten, zeugen davon, daß die Erreichung eines hohen Niveaus der Kenntnisse und Fertigkeiten nicht von wesentlichen Fortschritten in der Entwicklung der Schüler begleitet wird." 27)

Den Hauptmangel der herkömmlichen Grundschulbildung erblickt Zankov darin, daß der Grundschulunterricht vorwiegend auf Vermittlung von Techniken, Fertigkeiten und Kenntnissen abgestellt ist. Die Ursache dafür sei eine unrichtige Auffassung von der Stellung der Grundschule im Gesamtschulsystem und die irrtümliche Überzeugung, der Grundschulunterricht habe einen "vorbereitenden", "propädeutischen" Charakter.

3. *Das "neue didaktische System" L. V. Zankovs*

Um den vorhandenen Mängeln des Grundschulunterrichts abzuhelfen, entwickelte Zankov mit seinen Mitarbeitern ein "neues didaktisches System." Diese neue Didaktik ist an einem Bildungsziel orientiert, das sich von dem der bisherigen Grundschulbildung eindeutig unterscheidet:

> "Wir wollen einen schöpferischen Menschen erziehen, die heutige Methodik des Grundschulunterrichts aber formt die Schüler zu einseitigen Ausführenden." 28)

Zankovs Didaktik zeichnet sich durch ihre Orientierung an der "allgemeinen Entwicklung" des Kindes aus:

> "Als den didaktischen Kern heben wir die Effektivität des Unterrichtsprozesses für die allgemeine Entwicklung der Schüler hervor." 29)

Die Effektivität der Unterrichtsmethoden wird demnach nicht an der Beherrschung der vom Lehrplan vorgeschriebenen Fertigkeiten und Kenntnisse – deren Erwerb jedoch Zankov zufolge nicht vernachlässigt werden soll – sondern an dem Fortschritt der "allgemeinen", vor allem der intellektuellen Entwicklung des Kindes gemessen.

Der Begriff der "allgemeinen Entwicklung" spielt als das Hauptziel des Unterrichts in der didaktischen Konzeption Zankovs die entscheidende Rolle. Er ist mit dem Begriff der "allseitigen Entwicklung der Persönlichkeit" in der kommunistischen Pädagogik nicht identisch. Zankov erläutert ihn wie folgt:

> "Spricht man von der allgemeinen Entwicklung, so hat man den psychologischen Aspekt des Problems der menschlichen Entwicklung im Auge. Der Begriff der 'allgemeinen Entwicklung' ersetzt den der 'allseitigen Entwicklung" nicht. Wenn die Rede von der allseitigen Entwicklung ist, so meint man in der Hauptsache den

> sozialen Aspekt. Gerade auf dieser Ebene wurde das Problem der Entwicklung im Aufsatz F. F. Korolevs 'Allseitige Entwicklung der menschlichen Persönlichkeit – die wichtigste Aufgabe des Aufbaus des Kommunismus' untersucht.
>
> Unter der allgemeinen Entwicklung verstehen wir die Entwicklung der Persönlichkeit des Kindes, aller ihrer Seiten. Folglich wird die allgemeine wie auch die allseitige Entwicklung der begrenzten, einseitigen Entwicklung gegenübergestellt. Die Analyse der allgemeinen Entwicklung auf psychologischer Ebene wird in Richtung auf die einzelnen Formen der psychischen Tätigkeit hin durchgeführt. Hat man die traditionelle Aufteilung der Psyche in Verstand, Willen und Gefühl im Auge, so schließt die allgemeine Entwicklung alle diese drei Bereiche ein. Wir sind jedoch überzeugt, daß die erwähnte Dreigliederung aufgegeben wird: sie wird zweifellos durch andere Richtungen der psychologischen Analyse ersetzt werden. Wir benutzen sie deshalb nicht und ziehen es vor, von der analysierenden Beobachtung, dem abstrakten Denken und den praktischen Tätigkeiten als den Formen der psychischen Tätigkeit zu sprechen, die von uns erforscht werden." 30)

Die tragenden Säulen des "neuen didaktischen Systems" sind: hohes Schwierigkeitsniveau des Unterrichts, schnelles Tempo der Durcharbeitung des Lehrstoffes und hoher kognitiver Gehalt der vermittelten theoretischen Kenntnisse. Das "neue didaktische System" wird von Zankov als eine Ganzheit verstanden und in seinen inneren Zusammenhängen wie folgt erläutert:

> "Die Ganzheit des Systems tritt in der Wechselbeziehung seiner didaktischen Prinzipien zutage. Die Effektivität des experimentellen Systems erklärt sich nicht nur aus der Bedeutung jedes dieser Prinzipien für sich genommen, sondern in erster Linie aus ihrer wechselseitigen Bedingtheit." 31)

Die didaktischen Grundsätze des "neuen didaktischen Systems" wurden im Unterricht der Versuchsklassen angewendet. Daneben wurde die gleiche Anzahl von Parallelklassen nach der traditionellen Grundschulmethodik unterrichtet. Die Fortschritte in der "allgemeinen Entwicklung" der Kinder wurden in etwa zweijährigen Abständen festgestellt. Die im Bereich jeder der drei Komponenten der "allgemeinen Entwicklung" errechneten Mittelwerte der überprüften Schülergruppen wurden miteinander verglichen. Diese Vergleiche fielen eindeutig zugunsten der Versuchsklassen aus, die den Kontrollklassen nicht nur auf dem Gebiet der "allgemeinen Entwicklung" voraus waren, sondern auch bessere Schulleistungen vorzuweisen hatten.

4. Die methodische Problematik des Schulversuchs

Eines der wichtigsten Probleme des Schulversuchs bildete die Messung der einzelnen Faktoren der allgemeinen Entwicklung. Die von Zankov dabei angewendeten Methoden stießen bei seinen sowjetischen Kollegen auf zum Teil harte und berechtigte Kritik.[32]) Untersucht man jedoch die Problematik, vor die Zankov und seine Mitarbeiter bei der Aufgabe, die Fortschritte der "allgemeinen Entwicklung" zu messen, gestellt wurden, so erkennt man in ihr ein ungelöstes Problem der sowjetischen Psychologie, nämlich ihr Verhältnis zu standardisierten Testverfahren.

Der Rahmen dieses Beitrages erlaubt es nicht, die Situation der Psychologie in der Sowjetunion ausführlich zu erörtern. Es sei jedoch auf die Tatsache hingewiesen, daß dort seit Mitte der 30-er Jahre keine standardisierten Tests in der pädagogischen Psychologie verwendet werden.

Die vom Laboratorium im Verlauf der Untersuchungen gemessenen Faktoren der "allgemeinen Entwicklung" charakterisieren im wesentlichen die intellektuelle Entwicklung des Kindes. Zu ihrer Messung sind außerhalb der Sowjetunion eine große Anzahl zuverlässiger und als Gruppentests verwendbarer Verfahren entwickelt worden, die es ermöglicht hätten, objektive Meßwerte zu erhalten und eine große Anzahl von Kindern zu überprüfen, um eine breitere Vergleichsbasis zu bekommen.

Die vom Laboratorium gewählten Verfahren waren zu aufwendig und erlaubten es nicht, eine genügend große Zahl der Kinder gleichzeitig zu überprüfen. Die in Versuchs- und Kontrollklassen verglichenen Gruppen waren 12 bis 18 Personen stark. Jedes Kind mußte individuell getestet werden, wobei das Gespräch zwischen der Versuchsperson und dem Versuchsleiter protokolliert und ausgewertet wurde.

Die Feststellung der Entwicklungsfortschritte in der Beobachtungsfähigkeit erfolgte z.B. anhand einer im Gespräch mit dem Versuchsleiter gegebenen mündlichen Beschreibung eines vorgelegten Objekts. Dabei wurden die differenzierenden und systematisierenden Angaben nach einem Punktsystem bewertet. Ähnliche Verfahren wandte man auch bei der Messung der beiden übrigen Faktoren der "allgemeinen Entwicklung" an.

III. Die Bedeutung des Forschungsvorhabens "Unterricht und Entwicklung" für die Grundschulreform

Die kritischen Einwände gegen die einzelnen Mängel der vom Laboratorium verwendeten Untersuchungsverfahren vermögen jedoch die Gesamtleistung Zankovs und seiner Mitarbeiter nicht zu schmälern. Ihr Verdienst besteht in erster Linie in dem empirischen Nachweis der Möglichkeit, bei gezielter Förderung der intellektuellen Entwicklung den Grundschulkurs beträchtlich zu verkürzen.

Zankov entwickelte darüber hinaus als erster und einziger in der Sowjetunion ein neues didaktisches System des Grundschulunterrichts als Alternative zur vorherrschenden traditionellen Didaktik. Das Kennzeichen dieses Systems ist die Verlegung des Zentrums didaktischer Orientierung aus dem Bereich der Unterrichtsinhalte in den der psychischen Entwicklung des Kindes.

Einige der Grundsätze der didaktischen Konzeption Zankovs haben bereits Eingang in die von der Lehrplankommission entwickelten neuen Lehrpläne gefunden, so z.B. das Prinzip des Unterrichts auf hohem Schwierigkeitsniveau, das in der durchgehend vorgenommenen Vorverlegung der Unterrichtsstoffe und in der Reduzierung des Grundschulkurses erkennbar ist.

Ein weiteres Verdienst Zankovs besteht darin, auf den Zusammenhang zwischen den Unterrichtsmethoden und der intellektuellen Entwicklung der Schüler hingewiesen und diese Beziehung – wenn auch ohne abschliessende Aussagen – empirisch untersucht zu haben. Wie wichtig dieses Problem für die Realisierung der Reformpläne ist, zeigen die Ausführungen des Leiters der Abteilung für Lehrpläne und Unterrichtsmethodik im Ministerium für das Bildungswesen der UdSSR V. Strezikozin, der kürzlich in einem Artikel zum Wirkungsgrad der neuen Lehrpläne Stellung nahm. Er führte darin u.a. aus:

> "Folglich kann der neue Inhalt des Lehrstoffes, der vielseitige intellektuelle Entwicklung der Schüler zum Ziel hat, nicht wirksam werden, wenn er mit Methoden realisiert wird, die ein Erbe des dogmatischen Unterrichts sind. ...
>
> Die Ursache einer Reihe von Mängeln des Unterrichts nach den neuen Lehrplänen besteht darin, daß die Prinzipien des entwickelnden Unterrichts falsch verstanden und falsch realisiert werden." 33)

ANMERKUNGEN

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2) *Pravda* vom 13.8.1964.

3) *Pravda* vom 19.11.1966.

4) "V komissii po opredeleniju ob-ema i charaktera obrazovanija v srednej škole" ("In der Kommission zur Bestimmung des Umfanges und des Inhaltes der Mittelschulbildung"). In: *Sovetskaja pedagogika*, 1965, 7, S. 26–33. GLOWKA, D.: "Das sowjetische Schulwesen am Beginn einer neuen Etappe?" In: *Neue Sammlung* 7, 1967, 3, S. 209 ff.

5) *Children and Their Primary Schools. A Report of the Central Advisory Council for Education*, Vol. I, II. London: HMSO 1967.

6) *Die Grundschule*. Erscheint seit 1968 im G. Westermann Verlag, Braunschweig.

7) *Pedagogičeskaja enciklopedija* (*Pädagogische Enzyklopädie*). Bd. I–IV. Moskau 1964–1968, Bd. 1, S. 421.

8) Ebenda.

9) 1966 besuchten ca. 8 Mill. Kinder die Vorschuleinrichtungen der Sowjetunion. Die staatliche Planung sieht eine Erhöhung dieser Zahl auf 11,2 Mill. im Jahre 1970 vor. Vgl. SCHIFF, B.: "Ziele für den weiteren Ausbau des Bildungswesens". In: *Informationsdienst zum Bildungswesen in Osteuropa*. Hrsg. vom Referat für Bildungswesen des Osteuropa-Instituts an der Freien Universität Berlin, 1968, 14/15, S. 7 ff.

10) "Problemy načal'nogo obučenija" ("Probleme des Grundschulunterrichts"). In: *Sovetskaja pedagogika*, 1964, 12, S. 149.

11) Glowka, D.: a.a.O., S. 207 ff.

12) Die Zentren der grundschulpädagogischen Forschung in der APN sind: 1) Laboratorium für Erziehung und Entwicklung im Institut für Theorie und Geschichte der Pädagogik; 2) Laboratorium für Psychologie der Kinder im jüngeren Schulalter im Institut für Psychologie; 3) Abteilung für Grundschulunterricht im Institut für allgemeine und polytechnische Bildung.

13) Zankov, L. V.: *O predmete i metodach didaktičeskich issledovanij* (*Über den Gegenstand und die Methoden didaktischer Forschungen*). Moskau 1962, S. 143.

14) Zankov: *O načal'nom obučenii* (*Über den Grundschulunterricht*). Moskau 1963, S. 4.

15) Zankov: "Ėksperimental'naja sistema načal'nogo obučenija" ("Ein experimentelles System des Grundschulunterrichts"). In: *Narodnoe obrazovanie*, 1966, 12, S. 32.

16) *Sovetskaja pedagogika*, 1956, 12; 1957, 3, 4, 6, 8, 9, 10; 1958, 2.

17) Zit. nach Wygotski (Vygotskij), L. S.: *Denken und Sprechen*. Hrsg. von J. Helm, Berlin (Ost) 1964, S. 217.

18) *Razvitie učaščichsja v processe obučenija* (*I–II klassy*) (*Die Entwicklung der Schüler im Unterrichtsprozeß* (*I.–II. Klasse*)). Pod red. L. V. Zankova, Moskau 1963, S. 12.

19) Zankov: *Razvitie učaščichsja*, a.a.O., S. 12–13.

20) Zankov: *O načal'nom*, a.a.O., S. 24.

21) *Razvitie škol'nikov v processe obučenija* (*III–IV klassy*) (*Die Entwicklung der Schüler im Unterrichtsprozeß* (*III.–IV. Klasse*)). Pod red. L. V. Zankova, Moskau 1967, S. 10.

22) Schiff, B.: "Zur didaktischen Diskussion in der Sowjetunion". In: *didactica*, 2, 1968, 2, S. 125–139.

23) Zankov: "O didaktičeskich osnovach obučenija" ("Über die didaktischen Grundlagen des Unterrichts"). In: *Narodnoe obrazovanie*, 1962, 10, S. 38–47. Ders.: "Problemy načal'nogo obučenija" ("Probleme des Grundschulunterrichts"). In: *Sovetskaja pedagogika*, 1963, 11, S. 23–33.

24) Zankov: "O didaktičeskich osnovach", a.a.O., S. 40.

25) Ebenda, S. 39.

26) Zankov: *O načal'nom*, a.a.O., S. 19. Ders.: "Problemy načal'nogo", a.a.O., S. 27.

27) Zankov: *O načal'nom*, a.a.O., S. 20. Ders.: "Problemy načal'nogo", a.a.O., S. 28.

28) Zankov: *O načal'nom*, a.a.O., S. 15.

29) Ebenda.

30) Zankov: "Problemy načal'nogo", a.a.O., S. 28. Korolev F. F.: "Vsestoronnee razvitie čelovečeskoj ličnosti – važnejšaja zadača kommunističeskogo stroitel'stva". ("Allseitige Entwicklung der menschlichen Persönlichkeit – die wichtigste Aufgabe des Aufbaus des Kommunismus"). In: *Sovetskaja pedagogika*, 1961, 7.

31) *Razvitie škol'nikov*, a.a.O., S. 11 ff.

32) "Itogi obsuždenija 'novoj didaktičeskoj sistemy' L. V. Zankova" ("Das Fazit der Erörterung des 'neuen didaktischen Systems' L. V. Zankovs"). In: *Načal'naja škola*, 1966, 2, S. 67.

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PRIMARY SCHOOL REFORM IN THE USSR CAUSES AND PROBLEMS

by Bernhard Schiff, Walsrode

In the decade following 1958 the school system of the USSR underwent many hangces. The last reform measure taken was the law passed jointly in November

1966 by the Party and the Government, announcing the introduction of general ten-year schooling in 1970. This law foresees, amongst other things, a reform of primary education, which is to be reduced from four to three years. This planned primary school reform was prepared largely by the Central Curriculum Committee convened in 1964.

The motivations for this primary school reform arise from the necessity for a readjustment of the primary school to the changed school situation and from the critical revision of the existing conceptions of primary education through educational research.

The Academy of Pedagogical Sciences (APN) constitutes the centre of educational research, which is largely institutionalised. Research on primary education is adequately represented in almost all research institutions. With a series of research projects it has paved the way for the implementation of the plans for reform. The most important of these in this connection was the research project conducted by L. V. Zankov "Education and Development" in the APN Laboratory for Education and Development. Taking this project as an example, the author explains the problems and consequences of such research work. In several school experiments Zankov and his colleagues examined the correlations between instruction and the "general development" of pupils.

For the purpose of these school experiments, in which already in 1966 over 1,100 classes were involved, Zankow evolved a "new teaching concept, based essentially on the following principles: (1) Instruction at an advanced level; (2) rapid pace for dealing with the school subjects; (3) increased cognitive content of theoretical knowledge. The discussion of this system in the educational press led to a revival of the debate on questions concerning teaching methods in the Soviet Union (1962–66).

Methodological problems arising in this school experiment consisted in the selection of methods for measuring "general development." It was here that the rejection of standardised intelligence tests in Soviet educational psychology proved a disadvantage.

Notwithstanding criticism of several methodological questions, credit is due to Zankov and his colleagues for having proved empirically the possibility of shortening primary education by means of systematic promotion of the pupil's intellectual and psychological development. They have thereby made a significant contribution towards primary school reform in the Soviet Union.

REFORME DE L'ENSEIGNEMENT PRIMAIRE EN URSS CAUSES ET PROBLEMES

par BERNHARD SCHIFF, Walsrode

Le système scolaire de l'Union soviétique a subi depuis 1958 de nombreuses modifications. La dernière mesure de réforme prise fut la loi promulguée communément par le parti et le gouvernement en novembre 1966 et qui annonçait l'introduction pour 1970 d'une formation scolaire générale d'une durée de 10 années. Cette loi prévoit entre autres une réforme de l'enseignement primaire, dont la durée devrait être réduite de 4 à 3 ans. Cette réforme fut longuement préparée par la Commission centrale des programmes scolaires qui s'est réunie en 1964.

Les motifs de cette réforme de l'enseignement primaire proviennent aussi bien de la nécessité d'adapter l'enseignement primaire à l'évolution de la vie scolaire que de procéder par une recherche pédagogique à un examen critique des conceptions en vigueur dans l'enseignement primaire. Cette recherche pédagogique a apporté une contribution importante à la réalisation de la réforme.

Le Centre d'une recherche pédagogique largement institutionalisée est l'Académie des Sciences pédagogiques (APN). La recherche pédagogique, dans le cadre de l'école primaire, est largement représentée dans presque toutes les institutions de recherche. Elle a préparé la réalisation des plans de réforme par une série de travaux de recherche. Le plus important parmi ceux-ci fut le projet de recherche "Enseignement et Développement" du Laboratoire d'Education et de Développement de l'APN.

En prenant ce projet comme exemple, l'auteur montre et explique les problèmes et les conséquences de tels travaux de recherche. Zankov et ses collaborateurs ont examiné dans plusieurs expériences scolaires les corrélations entre l'enseignement et la "formation générale" des élèves.

Dans ce but, Zankov a élaboré pour ces expériences scolaires, auxquelles en 1966 déjà plus de 1100 classes ont pris part, un "nouveau système didactique" qui se base essentiellement sur les principes suivants: (1) Enseignement à un haut degré de difficulté; (2) rythme accéléré lors de l'étude des matières d'enseignement; (3) contenu cognitif accru des connaissances théoriques.

La publication de ce système dans la presse pédagogique a stimulé la discussion des problèmes didactiques en Union soviétique (1962–1966).

Le problème méthodologique de cette expérience scolaire a résidé dans le choix des méthodes d'évaluation de la "formation générale." C'est ici que s'est manifesté défavorablement, dans la psychologie pédagogique soviétique, le refus des tests d'intelligence standardisés.

Nonobstant les critiques se rapportant à quelques questions de méthodologie, le mérite revient à Zankov et à ses collaborateurs d'avoir établi par une recherche expérimentale les possibilités d'une réduction des cours primaires par une accélération déterminée du développement intellectuel et moral des élèves. Ils ont de cette manière contribué d'une façon significative à la réforme de l'enseignement primaire en Union soviétique.

RECENT TRENDS IN EDUCATIONAL EXPANSION IN CEYLON

by SWARNA JAYAWEERA, Ceylon

Introduction

While the educational system of developing countries present many common features, educational facilities show wide qualitative and quantitative variations which were obviously conditioned by past and present environmental forces in these countries. Ceylon is an example of a low income country which has provided opportunities in primary and secondary education on a scale generally found in more economically developed countries. This article seeks to trace the expansion of educational oppor-

tunities in Ceylon in the last quarter of a century and to indicate the causes and results of this social phenomenon.

The Colonial Background

The framework of the modern system of education in Ceylon was largely developed during the period of British rule from 1796 to 1948. British administration was imposed on a society which had had a long record of history, and new and western-oriented educational institutions had to be introduced to meet the political and cultural needs of colonial rule. Colonial educational policy also naturally bore the impress of contemporary educational trends in the metropolitan country. In 1931 when direct colonial rule ended and some degree of local participation was permitted in administration, an educational superstructure conditioned by the above needs had already been built. Educational policy had concentrated on promoting free elementary education of a cheap and inferior kind in the local languages for the masses and had created a limited number of select fee-levying English medium institutions for secondary education.1) A University College, a Medical College and a Law College provided higher education to less than a thousand students in a country with a population of over five million people.

The education imparted in these institutions was of an academic and literary type, and one Technical School, two Agricultural Schools and a few nondescript Industrial Schools, not one of which had a successful record, attempted to cater to those who sought non-administrative careers.2) Divisive factors such as the classification of schools on language basis and the management of schools by the state as well as by various voluntary agencies had prevented the even distribution of educational facilities in the island.

Education Policies 1940–1967

The years from 1931 marked a transitional era in the political evolution of the country culminating in the recovery of national independence in 1948. But developments such as the introduction of universal franchise in 1931 and the beginning of positive local participation in the formulation of educational policy made this a very significant period in social development. Certainly political independence did not mark a dividing line in the educational history of the country for the educational expansion of the post-independence era was largely the outcome of policies initiated in the early forties. Three important steps taken during these years were chiefly responsible for the educational progress of the years under review.

The colonial government's policy of withdrawing from secondary education and providing only one state secondary institution in the island, thereby giving denominational bodies a monopoly of secondary education, and its restrictive practice of confining secondary education to English fee-levying schools had resulted in the concentration in urban areas of secondary schools patronised to a large extent by the socially privileged classes. In 1940, however, the state once again entered the field of secondary education and attempted to redress the balance by opening in rural areas Central Schools which would provide a secondary English education to students from feeder rural primary "Vernacular" schools.[3]) By 1947 fifty-four Central Schools had been provided in the island on an electoral basis. A system of scholarships ensured free board and lodging in these schools to the talented, thus extending for the first time post elementary educational facilities to a fair number of rural children.

At the same time the Executive Committee for Education of the legislative assembly, the State Council, formed itself into a Special Committee by co-opting educationists, and after long deliberation produced a report in 1943 which introduced far reaching changes in educational policy.[4]) The most revolutionary proposal was the introduction of a scheme of free education from the infant classes through the entire system of education including the university. "Vernacular" education or education in the local languages had long been free and this measure would therefore open the doors of English schools to those who had hitherto been excluded from them through their inability to pay fees. A financial arrangement with the grant-aided schools whereby the state paid the salaries of teachers and provided a maintenance grant ensured that these schools too could make free education available to their pupils, and ultimately only fifteen schools elected to levy fees and function outside the free scheme.

Another important recommendation was that the medium of instruction in the primary school should be the mother tongue, that is, Sinhala, Tamil and English (for Eurasians and others of mixed parentage). The Committee accepted the principle that all education should be in the mother tongue but practical difficulties compelled it to retain the English medium for secondary education. These two reforms were implemented in October 1945 and a significant step in the extension of educational facilities was thus taken on the eve of political independence. A third reform recommended by the Committee was the diversification of secondary education on the lines of the tripartite system of secondary education in England, later modified to bifurcation at 14 years, but this proposal was never implemented. During this period the breakdown of communications with England due to the war hastened the separation of the University College from the University of London and the creation in 1942 of a local university consisting of the University College and the Medical College.

The last twenty years have seen the impact of these changes on the educational system. The demand for education as an agent of economic and social mobility was enhanced by the value attached to it in the new climate of political opinion and the demand became even more imperative in the context of the role accorded to education in developing countries everywhere. Two more policy decisions after independence which were a natural sequel to the reforms of the forties accelerated the pace of expansion.

Although free education was a great boon to the less favoured socio-economic groups, as long as English continued to be the medium of secondary and higher education, it tended to benefit the westernised section of the population who were better equipped to avail themselves of the opportunities of advancement now presented to them. The 1946 census revealed that only six percent of the country were literate in English and the English medium was therefore a formidable obstacle to a large majority of Ceylonese youth. In the fifties however the medium of instruction in secondary schools was changed to the mother tongue, year by year, and grade by grade, while Arts courses in the universities were also conducted in the local media from 1960. These measures completed the process of change begun in 1945 and the language-cum-socio-economic barrier to secondary and higher education was to a great extent removed by the sixties.

The nationalisation in 1961 of the majority of the denominational schools which had long been assailed as pockets of privilege was considered a further step towards the equalisation of opportunities of hitherto disadvantaged religious and social groups. Except for 94 fee-levying schools and 52 non-fee-levying private schools the rest of the schools 7,570 in number were now under the management of the state and it was claimed that there would be better use of available resources for educational planning.

These policies were not only motivated by a desire to eliminate economic, linguistic and religious barriers to educational advancement, they also marked a transformation in the concept of the role ascribed to education in Ceylonese society. The old concept of the desirability of restricting selective post elementary education to an elite of potential leaders gave place to a social philosophy which envisaged the maximum educational facilities possible for all who had the ability and aptitude to avail themselves of such opportunities. The theoretical basis of the free scheme included the concept of secondary education for all and the change in the medium of instruction and the absence of any process of selection for hierarchical types of secondary schools facilitated the expansion of post elementary education. If the ideal was not attained the reasons lay partly in the economic disabilities of a large section of a population in a low income country, disabilities which even free education could not overcome.

Other policy developments of the last twenty years further helped the movement towards the provision of more widespread educational facilities and these will be noted when tracing the expansionist trends at different educational levels. Against the background of the attitudinal framework created by these policies we shall now trace the extension of educational facilities from 1946 to 1967 at the three levels as defined by UNESCO.

Education at the First Level

The picture here is somewhat complicated by the fact that the traditional structure of education in Ceylon divided it into primary and secondary levels for the age groups 5 to 11 years and 12 to 18 years. Recent reform proposals and current reorganisation schemes envisage the creation of junior schools for children between 5 and 13 years of age followed by four-year senior schools. But as education has been in theory compulsory from 5 to 14 years, the figures provided for the first level, i.e. elementary education, are those for the compulsory age group 5 to 14 years.

TABLE I

Enrolment at the First Level 6)

Year	Total population	Pop. 5–14 years	Pop. 5–14 in school	% Pop. in school 5–14 of total pop. 5–14
1946	6,657,339	1,617,005	933,358	57.6
1953	8,097,895	1,824,779	1,307,464	71.6
1963	10,624,507	2,792,810	2,097,330	75.1

Table I gives the population and school enrolment figures for the elementary age group at the three census years. Ceylon had already over half this age group in school even before political independence and the proportion increased rather rapidly after free education and more slowly in the fifties and sixties. The percentage in school now is approximately 79% of this age group, a figure which by UNESCO standards is comparable to that of many developed countries.

Nevertheless it seems as though the impetus given to educational expansion at this level by the policies of the forties has now petered out and that further measures are now necessary if universal elementary education is to be realised. Education is free and schools have been provided in most parts of the island but geographical factors have limited the provision of adequate educational facilities in sparsely populated and remote areas while economic factors affect the retention rate in schools. School enrolment reaches a peak of over 90% at 10 years and the steep decline after 11 leading to half the age group leaving school by 14 is obviously due to the economic value of juvenile employment to families in the poorer economic strata.7) It is also interesting to note that this expansion in the school population has been achieved despite the fact that compulsory education from 5 to 14 years, though theoretically accepted from the early part of this century, has never been strictly enforced by the educational administration.

Education at the Second Level

While educational expansion at the first level thus proceeded steadily more significant changes took place in the hitherto selective field of secondary education. The development of the concept of secondary education for as large a number as possible and some of the policies introduced in the pursuit of this goal have been described earlier in this article. The differentiation of secondary education on a linguistic basis, however, delayed any appreciable changes untill the late fifties. The introduction of free education in 1945 filled the English secondary schools to capacity for these were the agents of social and economic mobility, but secondary education was still perforce a narrow ladder in a country in which English literacy was limited to six percent of the population. In the census year 1953 only 11.2 percent of the age group 15 to 19 years received secondary education comprising four years of post elementary education in general or vocational secondary institutions.

The next ten years from 1953 to 1963 saw a rapid increase in enrolment at this level coinciding year by year with the change in the media of instruction in secondary schools. Table II illustrates this expansion in general secondary education which increased the proportion of students receiving education at the second level to 36.1% of the 15 to 19 age group in 1963.

Education at the second level in Ceylon is more or less geared to two external examinations at Grade X (16 years) and Grade XII (18 years). The former, the General Certificate in Education (Ordinary Level), leads to occupations of an intermediate range while the latter, the General Certificate in Education (Advanced Level), provides on a competitive basis access to university education. The change in the media of instruction to the national languages was effected in Grades IX and X in 1956 and 1957 respectively and in Grades XI and XII in 1958 and 1959, while the Uni-

TABLE II

Student Enrolment at the First and Second Levels (General Education) 1953–1967 [8])

Year	First Level Grades I–VIII	Second Level Grades IX–X	 Grades XI–XII
1953	1,477,138	81,840	5,870
1957	1,614,470	151,268	6,946
1960	2,008,885	207,716	17,415
1963	2,180,552	300,044	34,685
1967	2,201,040	310,091	47,394

versity of Ceylon began to conduct the major part of its Arts courses in the mother tongue from 1960 and two new universities teaching in the Sinhala medium were created in 1959. The effect of these educational changes can be seen in Table II in the almost fourfold increase in enrolment in Grades IX and X and the sevenfold increase in Grades XI and XII from 1953 to 1963 in comparison with the much slower rate of increase in Level I.

Grades XI and XII, or the university entrance forms as they were popularly known, provided access to educational, social and economic advancement – to university education, remunerative jobs and attendant social rewards. They had been the narrowest section of the school system since their inception in the early forties and in view of the absence of adequate diversified forms of secondary education and the increase of clerical unemployment, were the only avenue open to the able and the ambitious.

While the change of media removed a formidable barrier to educational opportunity other policies too were formulated during this period to widen educational provision. Scholarships were not only awarded at Grades V and VIII to able but economically disadvantaged students but the provision of school facilities at this level was also considerably increased. In 1942 the year in which the University of Ceylon was established only 30 schools had been able to present candidates for university admission. The number of schools with university entrance classes increased to 118 by 1953 due to the increased demand for higher education, but as the media changed the administration began a policy of upgrading schools to senior secondary status, that is, they were provided with Grades XI and XII classes to cope with the numbers who wished to avail themselves of the opportunities available for higher education. The majority of these upgraded schools were in the rural areas where previously only 57 Central schools had provided access to the university. By 1960, 319 schools sent in students to the university, and Table III shows clearly that the greatest increase in the provision of school facilities in the twenty years after 1947 was at the senior secondary level.

TABLE III

Number of Schools 9)

Year	Total	Collegiate and Central	Senior Secondary
1947	5,915	72	205
1953	6,731	94	307
1963	9,327	896	3,325
1966	9,560	1,024	3,306

The significant increase in enrolment at the second level is further borne out by the statistics of candidates appearing for the G.C.E. examinations during this period.

TABLE IV

Examination Candidates General Certificate of Education (Ordinary and Advanced Levels) 10)

Year	G.C.E. (O. Level) Grade X	G.C.E. (A. Level) Grade XII
1947	25,108	926
1953	56,325	1,100
1963	191,698	11,870
1967	255,404	30,570

These expansionist trends had their less favourable aspects too. As Tables II and IV indicate only a small proportion of students were able to proceed beyond Grade X partly because admission to Grade XI was restricted to those who fulfilled specific requirements at the G.C.E. Ordinary Level examination. The provision of secondary vocational institutions which could have absorbed a large number of this age group proceeded very sluggishly and the increase of enrolment in these during this period was comparatively insignificant. Training colleges were even reduced by one from 25 in 1947 to 24 in 1967 and the total enrolment in these in the latter year was 5,570. Technical institutions increased from one to eleven but eight of these were very small junior technical schools. The two agricultural schools in 1947 were amalgamated into one in 1966 while the twelve practical farm schools which gave a very rudimentary type of agricultural training increased to nineteen although thirteen of these were limited to the training of agricultural teachers. The total enrolment in these vocational institutions increased from 2,500 to 11,699 during this period.

Similarly the general secondary school, which following the British practice of imparting academic and vocational education in different institutions, had from the nineteenth century given an elitist education with an academic and largely literary bias, continued to give this same type of education to the larger numbers to which it now had to cater. In 1966 of 9,541 schools only 524 provided facilties for science education (147 of these to Grade XII and the rest to Grade X), 355 schools had commerce classes, 300 had woodwork and metalwork sections, 375 handicraft sections and 127 had agricultural courses.11) Practical streams at this level are a very recent innovation and Table V shows the distribution of students in arts and science classes.

TABLE V

Students Offering Arts and Science Courses at the Second Level in Government Schools – 1967 12)

	Arts	Science	% in Arts Classes
Grades IX–X	223,521	55,156	80.2
Grades XI–XII	30,478	9,811	75.5

In explanation it could be said that due to the expense of providing facilities in scientific and vocational education the increased provision of university entrance classes was mainly confined to arts courses. Here too teachers of subjects such as Geography were scarce while graduates in oriental studies were plentiful with the result that the curricular offerings in these classes in many schools particularly in rural areas were restricted to the oriental languages thereby accentuating the existing disproportion between literary and non-literary studies at this level.

Education at the Third Level

If the late fifties saw the sudden expansion of senior secondary education the products of these schools began to clamour for entry into higher educational institutions in the sixties. This impact was in the nature of an educational explosion in a country in which tertiary education had always formed a very narrow segment at the top of the educational pyramid.

The University of Ceylon was inaugurated in 1942 in Colombo and its total enrolment at this stage was only 904 students while its curriculum was restricted to Arts (Humanities and Social Sciences), Oriental Languages, Science and Medicine. After 1947 courses in Law, Agriculture, Veterinary Science, Education and Engineering were added and a section of the University was removed to a residential campus at Peradeniya in the hill country, but the University remained till 1960 the preserve of the English educated elite. The impact of free education in extending facilities in higher education to the less economically favoured members of this group and to those who, through sheer ability and arduous effort, obtained access to it through the rural central schools is seen in the increase in enrolment from 1,065 in 1945 to 2,036 in 1950. In the fifties, however, numbers increased very slowly to 3,181 in 1960, partly due to the language barrier which excluded the vast majority of the school population from the university and partly due to the fact that official policy in the early fifties sought to limit university education to a microscopic high ability group in the population.

Due to changes at the second level the university of Ceylon was compelled from 1960 to conduct the majority of its Arts courses in the three media, Sinhala, Tamil and English. Religio-cultural revivalist trends led to the transformation in 1959 of two traditional centres of Buddhist studies and oriental scholarship into two new universities – the Vidyodaya and Vidyalankara Universities situated in two suburbs of Colombo and imparting instruction only in the Sinhala medium. These two universities awarded external degrees as well and the University of Ceylon too began to grant external degrees from 1961 and to relax its residence rules to permit non-residential internal students within a specified radius. The increased influence of egalitarian ideas on educational policy formulation and the pressure upwards from the secondary schools noted earlier led to a steep increase in admission and enrolment in the sixties, and Table VI shows that the University of Ceylon trebled its student population in five years from 1960 to 1965.

The University of Ceylon felt the sudden pressure on its accomodations and resources and urged the need for more institutions at university level.[14]) The faculties of Science and Medicine had remained in Colombo while the other faculties had moved to Peradeniya, but in 1961 the University was compelled to open two new Science and Medical faculties in Peradeniya and a second Arts faculty had to be started in Colombo in 1962. In 1965 the adoption of an extremely liberal policy of admission led to the influx into the Arts faculty of an unprecedented number of new entrants, 3,930 in number, while the total student population of the University had been only 3,684 in 1960. Since 1965 the University of Ceylon enrolment has been limited to just over 10,000 students while the Vidyodaya and Vidyalankara universities have an enrolment of approximately

TABLE VI

Student Enrolment at the Universities [13]

Year	University of Ceylon	Vidyodaya Univ.	Vidyalankara Univ.
1959–60	3,181	501	445
1960–61	3,684	807	538
1961–62	4,655	808	654
1962–63	5,117	976	802
1963–64	5,706	1,430	1,134
1964–65	7,182	1,492	1,315
1965–66	10,723	1,649	1,996
1966–67	10,423	1,863	2,136

2,000 students each. The unwieldly task of administering two campuses of the University of Ceylon separated by a distance of about seventy miles led to its division into the University of Ceylon, Peradeniya and the University of Ceylon, Colombo in 1967 thus bringing the total of universities in Ceylon to four.

These developments in higher education during the last decade opened the portals of university education to less favoured socio-economic classes who in addition to free tuition are being assisted to some extent by scholarships and bursaries. The social composition of the University of Ceylon has changed from its upper middle class ethos of the early forties and low middle class and urban and rural working class students now predominate. An equally revolutionary change has taken place in the proportion of men and women students. The percentage of women students in the University of Ceylon increased from 10.1% in 1942 to 44% in 1966. Vidyodaya and Vidyalankara universities due to their religious complexion opened their doors to women students only in 1966 and male students still dominate numerically in these institutions, thereby reducing the overall percentage of women students in the four universities to 37.1% – a proportion that compares favourably with many developed countries such as England where the percentage in 1959 was 28. It should be added that the preponderance of women students in the universities in Ceylon is found in the Arts faculties as they constitute only 25% in the Medical and Science faculties and very much less in the others. Moreover the number of students in universities or higher educational institutions in proportion to the total population of Ceylon is very low in comparison with the situation in many developed and developing countries. With all the progress of the sixties, in 1967 only 1.6% of the age group 19 to 24 years and 130 per 100,000 population were in higher educational institutions.

This recent expansion in enrolment at the third level has also taken a course which has created an imbalance between the educational and the economic structure of the country. The expansion of the Medical and Science faculties in particular has been limited by the lack of laboratory accomodation while no such impediment has checked the growth of the Arts faculties. Until 1960 the proportion of students in the different faculties (Table VII) has compared not unfavourably with many other countries such as England where, according to the Robbins Report, 43% of students followed courses in the Humanities and the Social Sciences. But after 1960 the influx of students from the upgraded senior secondary schools which had through lack of teaching personnel been compelled to limit their curricula to Arts subjects, the affiliation of Pirivenas or traditional institutions of learning to the Vidyodaya and Vidyalankara universities, and the liberal policy of admission to the Arts faculty specially in 1965 altered the balance so as to create a preponderance of Arts graduates in the country.

TABLE VII

Enrolment by Faculties – University of Ceylon 15)

Year	Arts & Oriental Studies	%	Science	%	Medical & Dental	%	Agriculture & Vet. Sc.	%	Engineering	%	Others	%	Total
1942–43	396	43.6	165	18.3	343	37.9	—	—	—	—	—	—	904
1960–61	1,678	45.5	562	15.3	1,115	30.2	47	1.3	249	6.8	33	0.9	3,684
1966–67	7,108	68.2	802	7.7	1,646	15.8	153	1.5	571	5.5	143	1.4	10,423

Similarly the output of Arts graduates from the universities increased from 50.5% of the total number of graduates in 1942 to 70.1% in 1966 and is likely to increase more when the 1965 entrants graduate. As Vidyodaya and Vidyalankara universities have new Science faculties with 85 Science students from a total enrolment of 3,991 students in 1967, the proportion of Arts graduates from all four universities increases to 81.8%. Lack of sufficient facilities for science education at the second level, limitations of equipment and staff for scientific studies in the universities and the failure to organise a diversified structure of tertiary educational institutions to meet the demand for further education from secondary school leavers has undoubtedly led to this uncontrolled expansion of the content rather than the quantity of higher education in the country. Comparative statistics as well as the fact that students with four Advanced Level passes failed to find places in universities indicate that much higher education potential is still wasted in Ceylon.

Current plans aim at diversifying the structure of higher education by the provision of some employment-oriented courses in institutions outside the universities. The Law College established at the end of the nineteenth century and the new College of Technology are the only tertiary educational institutions other than the universities and a few private institutions. Steps are now being taken to open five junior university colleges in 1968 which will receive approximately one thousand students with three Advanced Level passes and which will provide courses in fields such as Personnel Management, Banking, Agriculture, Commerce and Librarianship for middle level employment.

Consequences and Problems

It has been stated that countries which have an enrolment ratio of 73 at the first level, 59 at the second level and 11 at the third level could be classified as advanced countries with repect to the provision of educational facilities.[16]) In Ceylon's educational pyramid enrolment at the first level has now reached this standard while the fact that girls constitute 48.2% of students at levels I and II taken together and 37.1% at the third level is another favourable feature of the educational system. Enrolment at the second level has still to overcome the handicap of a niggardly start while

TABLE VIII

Distribution of Total Enrolment in Educational Institutions [17])

	First Level	Second Level	Third Level
World 1961–62	77.9	19.1	3.0
Asia 1961–62 (excluding USSR)	81.6	16.7	1.7
Ceylon 1961–62	87.8	11.7	0.2
Ceylon 1966–67	85.1	14.3	0.6

Table VIII shows that the third level is quantitatively the weakest aspect of the structure.

Defects in the pattern of expansion during the last twenty years are easily discernable even to the casual observer. Population density varies in different parts of the island and even at the first level wide disparities exist between the educational facilities available in the populous Western province in which the administrative capital, Colombo, is situated and in the undeveloped Uva and north-central provinces. Approximately two-thirds of the teaching force have had no higher education and no professional training. Science education is still limited to the economically privileged. There has been very little diversification of courses in existing institutions at the second and third levels and no pluralistic development of secondary and tertiary educational institutions.

Despite these deficiencies the record of expansion has been phenomenal for a low income country with a per capita income of 140 (US) dollars. This expansion is the product of a demand which had political implications in the context of constitutional changes dating from 1931. From colonial times education had provided the key to economic and social mobility in Ceylon and in recent decades the "revolution of rising expectations" in all developing countries has enhanced the role ascribed to it in the social structure. Demographic factors strained the physical resources of the educational system and account to some extent for the increased size of the school population. Due to better health services the death rate declined from 21.5 in 1946 to 8.1 in 1963 while the birth rate remained more or less static at approximately 35 per 1000 population during this period. The average annual population increase has been 2.5% and unlike most industrialised countries the population under 19 years constitutes 35% of the total population.

Undeterred by the existence of a large school age population and limited economic resources the policy makers of the last quarter of a century showed a willingness to meet this demand for educational opportunities. They took measures to remove barriers to educational opportunities through organisational changes and they gave priority to education in the allocation of resources. Free education through the entire educational system aided by somewhat haphazard welfare measures such as scholarships and free meals removed some of the economic obstacles to educational expansion in a low income country. Annual educational expenditure increased from Rupees 38,808,445.35 in 1945 to Rs. 69,813,605.12 in 1947 and has since then soared to Rs. 402,175,967 in 1967. Ceylon spends 5.2% of her gross national product and approximately 20% of her total annual expenditure on her educational services, a figure equal to that spent in many economically advanced countries.

Such policies have contributed to raising the general educational level in the country and the percentage of literacy has risen from 57.8 in 1946 to 71.6 in the census year 1963, while over 80% were literate in that year in the age group under 35 years. Yet the educational system and these policies have come in for a great deal of criticism in recent years in view of the very low increase in the *per capita* production rate. Ceylon's economic growth is reported to have been one of the poorest even in Asia in 1966–67,18) and it has been suggested that the imbalance between the rates of educational expansion and economic growth is due to the malfunctioning of the educational system.

It is true that quantitative development has been the key-note of educational change in the past twenty years and that the major effort made was to expand input and output rather than to change the structure of education to meet the socio-economic needs of a developing country. Educational policy was responsible for this imbalance to the extent that education was viewed chiefly as a social service and the extension of educational facilities was primarily conceived as a response to social demand. The role of education as an economic investment received very cursory attention. No adequate man power survey has been made to assess the needs of a changing economy. In consequence there was an oversupply of first academic school products and then academic university products in the labour market. Currently 8,200 graduates, that is 28% of the total stock of graduates, are stated to be unemployed and Ceylon is therefore faced with the twin problem of a wastage of educated talent and a shortage of technically qualified personnel.

Factors other than educational policy have, however, also contributed their share to this situation. The economic pattern has always favoured academic education, and vocational ambitions have been a realistic reaction to the economic structure which rewarded the administrator rather than the producer. The lopsided enrolment pattern in Ceylon is therefore a product of both, economic and educational policies. Moreover the slow rate of economic growth was partly due to the high rate of population increase. In 1966–67 the G.N.P. increased by 3% and population by 2.5%. Educational expenditure incurred in the provision of facilities for even the elementary school-age group, which comprises 26% of the population, becomes in the circumstances a severe financial burden.

The current economic crisis brought about by the falling prices of Ceylon's exports in international markets has highlighted the problem. It is often forgotten that educated unemployment is due not only to an ill-balanced educational system but also to the lack of capital to provide employment for the educated in a country with a traditional agricultural economy and a shortage of foreign exchange. It is not that Ceylon has a surplus of graduates but that the present low per capita income makes it difficult to absorb these graduates.

Educational development often runs ahead of economic development in the early years ot a nation's growth and the example of countries such as Japan has shown that educational expenditure does not necessarily have to be commensurate with the average income level in the country. In Ceylon, however, the disparity has been very marked and the lack of planning that has been characteristic of policies of expansion has caused the educational system to be temporarily dysfunctional in the context of its immediate social needs. Nevertheless, since education is an investment and as a rising level of general education will with all its limitations contribute to economic development in the long run, it would be a short-sighted policy to reduce drastically educational expenditure even in a time of crisis. This would be particularly so in a country like Ceylon where a restructuring rather than a reduction of facilities seems to be the imperative need.

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ZUR JÜNGSTEN ENTWICKLUNG DES ERZIEHUNGSWESENS IN CEYLON

von SWARNA JAYAWEERA, Ceylon

In Ceylon hat die Entwicklung des Erziehungswesens während des letzten Vierteljahrhunderts zum Ausbau eines Primar- und Sekundarschulsystems geführt, das sich als weit expansiver erweist als das Schulwesen zahlreicher anderer Entwicklungsländer in ähnlicher wirtschaftlicher Lage. Unter britischer Herrschaft wurde kostenloser Grundschulunterricht in den Lokalsprachen erteilt, während nur eine sehr kleine sozio-ökonomische Elite in den Genuß einer äußerst selektiven, kostspieligen, englisch-sprachigen Sekundarschul- und Universitätsbildung gelangte. Aber infolge von Verfassungsänderungen wurde 1931, also noch vor Erlangung der Unabhängigkeit im Jahre 1948, eine neue Erziehungspolitik eingeführt, die auf die Ausweitung der Bildungsmöglichkeiten für alle abzielte. 1945 wurde für alle Ebenen des Erziehungswesens, von der Vorschule bis zur Universität, die kostenlose Ausbildung eingeführt. Gleichzeitig wurden die Lokalsprachen Sinhala und Tamil zu Unterrichtssprachen der Primarschule erhoben; ab 1953 folgte Jahr für Jahr und Klasse für Klasse die Sekundarschule, und ab 1960 mußten auch an der Universität die geisteswissenschaftlichen Vorlesungen in diesen Sprachen stattfinden. Diese Bildungspolitik beseitigte allmählich die sprachlichen und sozio-ökonomisch bedingten Bildungsbarrieren, die Sekundar- und Hochschulbildung zum ausschließlichen Vorrecht der wirtschaftlich begünstigten Schichten gemacht hatten. Als Folge dieser Entwicklung mußten Ende der fünfziger Jahre die Bildungsmöglichkeiten der Sekundarschule durch Einrichtung neuer Oberstufenklassen erweitert und die Universität von Ceylon vergrößert sowie neue Universitäten gegründet werden. Der Prozentsatz der 5–14-jährigen Schüler ist von 57,6% im Jahre 1946 auf 75,1% im Jahre 1963 gestiegen und ihr Anteil beträgt heute nahezu 79%. Der Prozentsatz der 15–19-jährigen Schüler stieg zunächst nur langsam, ihr Anteil wuchs jedoch von 11,2% im Jahre 1953 auf 36,1% im Jahre 1963. Die Hochschuleinrichtungen sind noch immer sehr beschränkt und der Anteil der Studenten betrug 1963 1,6% der 19–24-jährigen. Diese quantitative Erweiterung des Erziehungswesens wurde jedoch von keiner qualitativen Differenzierung der Sekundar- und Hochschulbildung begleitet. Die einseitige akademische Ausrichtung der Lehrpläne dieser Bildungseinrichtungen, verdeutlicht im Ausbau der geisteswissenschaftlichen auf Kosten der naturwissenschaftlichen Fakultäten der Universitäten, führte zu Problemen wie der Arbeitslosigkeit von etwa 8,000 Universitätsabsolventen. Ceylon gibt 5,2% des Brutto-Sozialprodukts und etwa 20% der jährlichen Ausgaben für das Erziehungswesen aus, aber da bisher stets in erster Linie der soziale Fortschritt gefördert wurde, vermochte das Erziehungswesen nicht entscheidend zur wirtschaftlichen Entwicklung des Landes beizutragen. Andererseits haben Wirtschaftsstruktur und Wirtschaftspolitik die notwendige qualitative Differenzierung des Bildungswesens keineswegs beschleunigt, vielmehr haben die hohe Bevölkerungszuwachsrate sowie

eine permanente Wirtschaftskrise die wirtschaftliche Entwicklung beeinträchtigt und verdeutlichen das mangelnde Gleichgewicht zwischen Ausbildung und wirtschaftlicher Entwicklung.

NOUVELLES TENDANCES DANS L'EXPANSION DE L'ENSEIGNEMENT A CEYLAN

par SWARNA JAYAWEERA, Ceylan

Le développement de l'éducation à Ceylan entre 1875 et 1900 a fait naître un système d'enseignement primaire et secondaire qui est plus expansif que celui de la plupart des pays en voie de développement disposant des mêmes ressources économiques. Sous le gouvernement britannique, un enseignement gratuit élémentaire avait été dispensé dans les langues locales, tandis qu'un enseignement secondaire et supérieur payant et très sélectif en langue anglaise avait été le privilège d'une très petite élite socio-économique. Mais à la suite des changements apportés à la Constitution à partir de 1931, on a introduit même avant que l'indépendance politique ne soit accordée en 1948, de nouvelles mesures tendant à l'expansion des facilités de l'enseignement.

En 1945, on a introduit l'enseignement gratuit pour tout le système scolaire depuis les classes élémentaires jusqu'à l'université. En même temps, les cours de l'enseignement primaire furent donnés dans les langues du pays, le *Sinhala* et le *Tamil.* A partir de 1953, d'année en année et de classe en classe, les cours à l'école secondaire et à l'université à partir de 1960 durent être donnés dans ces langues. Cette politique a petit à petit éliminé les obstacles existant entre les langues et le système socio-économique qui avaient fait de l'enseignement secondaire et supérieur l'apanage des classes économiquement favorisées.

C'est pourquoi, on a dû à partir de 1950 développer le système d'enseignement sous la forme de nouvelles classes secondaires supérieures, agrandir l'université de Ceylan et construire de nouvelles universités. Le pourcentage des jeunes entre 5 et 14 ans (premier degré) inscrits dans les établissements scolaires passa de 57% en 1946 à 75% en 1963, et la proportion est maintenant d'environ 79%. Le développement au niveau secondaire (jeunes de 15 à 19 ans) s'est d'abord effectué lentement, mais le taux d'inscription est passé du 11,2% en 1953 à 36,1% en 1963. Le nombre d'instituts d'enseignement supérieur est toujours peu élevé et le pourcentage des jeunes de 19 à 24 ans dans ces instituts n'était que de 1,6% en 1963.

Ce développement n'a pas été accompagné par une différenciation des facilités d'enseignement secondaire et universitaire. La tendance académique du programme d'études de ces institutions prouvée par le développement des facultés des lettres des universités au détriment des facultés des sciences a par conséquent provoqué des problèmes, tels que: le chômage d'environ huit mille diplômés. Ceylan dépense 5,2% de son revenu national brut et environ 20% de ses dépenses annuelles pour l'enseignement, mais comme on s'est toujours intéressé au progrès social, l'enseignement n'a pas contribué suffisamment au développement économique. En même temps, la structure et la politique économique n'ont pas favorisé un changement rapide des programmes d'étude, et le taux croissant de la population et une crise économique permanente ont ralenti le progrès économique et ont de plus mis en évidence de déséquilibre entre l'éducation et le développement économique.

SCHOOL ORGANIZATION, SCHOOL LOCATION AND STUDENT ACHIEVEMENT

by SIXTEN MARKLUND, Stockholm

I. The Problem of Sparsely Populated Areas

1. Varying Educational Conditions in Densely and Sparsely Populated Regions

Educational research is organized primarily in towns and other densely populated areas. Perhaps as much as 99 per cent of all experiments are performed in urban regions. Sociological-statistical investigations are also made mostly in towns. One may well ask whether educational research is one of the many luxuries our urban culture indulges in.

Most fundamental problems of education have, perhaps, nothing to do with the differences between town and country, and as long as vital problems remain unsolved there is nothing wrong in studying urban populations. But the problem to be discussed here is quite a different one. Who helps the sparsely populated regions of the world to solve their specific problems of education?

There is no doubt at all that thinly populated regions have their own special problems, and it is only rarely that educational research is concerned with these problems. As school organizational and administrative problems they have been recognized and discussed for a long time. The attitude usually adopted has been that the existence of thinly populated areas in a highly-developed society, great distances and scattered settlements have prevented the region as a whole from establishing a uniform system, or at least a system of consistently high quality. In some countries, in Scandinavia, for example, efforts have been made to provide a uniform system of education for the whole country, and no general facilities that can be applied in towns but not in the country have been recommended. In such countries, the problems of thinly populated areas are somewhat different in character from those of countries with great local influence and little central planning. In countries where the differences between towns and rural areas are great, widely differing systems of education have been developed within the country.

If the problem in the former case may be said to be that existing sparcely populated areas make a good homogeneous solution difficult, in the latter case it may be said that towns and rural areas develop differently, and, generally speaking, the rural areas lag behind in development.

Sparsely populated areas are easily forgotten, in spite of the fact that they are large. It is not the wide expanses of country, but only their few inhabitants that count. And country people are often taciturn and low-voiced. There are many reasons why this forgetfulness cannot be regarded as right and proper. For those who seriously advocate educational democracy, no system of education that disregards a certain group of people can be justified. The system is no less intolerable because these people are scattered over a wide area.

It is characteristic of the present time that education is regarded as an investment which must give returns. But it is claimed at the same time that education is a human right, a consumer article. When television was introduced into Sweden, broadcasting stations were built at public expense to cover the whole country. No one suggested that people living in the mountains and forests would have to be satisfied with second-rate reception. The problem was to cover a whole region, no inhabited spot was to be neglected. The idea may have been the same when the problem was to establish a satisfactory system of education in an inhabited area – but it is much more difficult to attain "equity."

2. *Rural Schools in Developing and Industrial Countries*

A glance at a map of the world tells us a little about the enormous extent of sparsely populated areas. The most wide-spread are in three climatological zones: a northern arctic zone, a northern desert zone, and a southern desert zone. The first stretches from Scandinavia eastwards through the whole of the Soviet Union and Alaska to Canada. It contains great forest regions, mountains, marshes, tundra and ice-covered tracts. The second zone comprises the whole of the wide arid region from North Africa over West and Central Asia to western North America. The third is a corresponding dry zone in South Africa, South America and Australia.

Smaller sparsely populated areas are to be found everywhere. There cannot be many states without such regions, although they cover small areas. This makes the educational and school organizational problems universal, and interest is increasing on the international plane. UNESCO, which has, to a large extent, devoted its efforts to problems of education in developing countries, has often been concerned with problems of sparsely populated regions. But developing country problems and problems of thinly populated areas only partly overlap. One has only to consider such regions as India, Pakistan and Java to realize this. The International Bureau of Education (IBE) in Geneva carried out an international study in 1957/58 of how education was organized in purely rural areas. The IBE devoted its annual summer conference to this problem in 1958, and reported the studies in a publication entitled *Facilities for Education in*

*Rural Areas.*1) In 1961, the IBE made a similar study of small rural schools, and devoted a corresponding international conference to the educational and organizational problems of such schools. A report of this investigation was published under the title *The One-Teacher School.*2)

This publication reports general experience of instruction in one-teacher schools. It is remarkable and sometimes touching how, in some countries, the advantages of such schools are emphasized. But it is difficult to avoid the feeling that a virtue is being made of necessity by praising such schools when no others are available. This is not always the case, however, for the investigation showed that one-teacher schools existed in towns as well as in rural areas, in economically well-developed industrial states as well as in developing countries.

Everywhere in the world, where compulsory school attendance exists, education has started with one teacher and one group of students. The latter gradually became divided into classes or levels, and more teachers were engaged. At the above-mentioned Geneva conference in 1961, the function of one-teacher schools was studied in detail. Internationally, these schools are the most powerful weapons in the struggle against illiteracy in developing countries. International educational statistics show, however, that one-teacher schools are by no means unknown in Western European and American cultural regions. Even in densely populated countries with a conventionally high standard of culture there are still many one-teacher schools, and new ones are still being established. Sometimes, several one-teacher schools are organized in places where it is possible to establish one large school with several teachers. The Geneva conference gave information about the reasons for this: schools with only one teacher each were not accepted merely as substitutes for a larger and "better school," but also as a type of school with certain advantages of a purely qualitative nature. The advantages mentioned primarily are student welfare, individualization, and work-fostering aspects.

An international investigation concerning sixty nations, carried out in the spring of 1961 and reported at the Geneva conference, showed that one-teacher schools were more or less common in most countries. Among the forty-five states which reported the frequency of one-teacher schools, the order was as follows. (The figures give the percentages of teachers in compulsory education working in one-teacher schools).

1. Spain	47.0	5. Colombia	30.0
2. Nicaragua	39.0	6. Turkey	25.0
3. Brazil	38.9	7. Ecuador	23.3
4. Honduras	35.9	8. Albania	23.0

9. Luxembourg	22.8	28. Byelorussia	4.9
10. Afghanistan	21.8	29. Denmark	4.8
11. France	19.9	30. Ethiopia	4.2
12. India	16.4	31. New Zealand	3.8
13. Soviet Union	14.6	32. Poland	3.2
14. Iran	13.0	33. Norway	3.0
15. Switzerland	9.7	34. Finland	3.0
16. Uruguay	9.5	35. United States	2.9
17. Panama	9.0	36. Union South Africa	2.8
18. Australia	8.9	37. United Arab Republic	1.5
19. Vietnam	6.6	38. Malaya	1.3
20. Fed. Rep. of Germany	6.5	39. Great Britain	1.1
21. Jordan	6.4	40. Thailand	0.9
22. Italy	6.2	41. Sweden	0.5
23. Belgium	5.9	42. Hungary	0.3
24. Austria	5.8	43. Netherlands	0.2
25. Ireland	5.3	44. Japan	0.2
26. Chile	5.3	45. Tunisia	0.1
27. Bulgaria	5.1		

The order is astonishing in many respects. No distinct grouping in developing and industrialized countries can be discerned. In the same way, densely and sparsely populated countries are mixed together. Spain tops the list, followed immediately by some Latin-American countries. Almost half of the Spanish teachers were working in schools with only one teacher. France reported about 43,000 one-teacher schools, the United States 23,000,3) the Soviet Union 22,000 and Italy 11,000.

In most countries, the number of one-teacher schools is declining, although at a greatly varying rate. In many quarters there seems to be no hurry to speed up this process. In eighteen of the countries, according to the Geneva investigation, there were occasionally several one-teacher schools in the same place. There were various reasons for retaining a system so foreign to modern school planning; girls and boys were instructed separately (Belgium, Colombia, Ecuador, India, Luxembourg, Switzerland), divisions were made according to religion or language (Fed. Rep. of Germany, Great Britain, Northern Ireland), reference was made to the sparsity of population or the small municipalities (Belgium, Nicaragua, the Philippines, Great Britain, Austria), to lack of school buildings with more than one classroom (Brazil, Spain, Venezuela) and to traditional, educational and psychological factors (Spain).

It is only natural that there was a largish catalogue of the disadvantages of one-teacher schools. Often the great responsibility placed on the one teacher was stressed; he had to take care of all the students every day of the scholastic year, and during every year of school attendance, he had, alone, to plan and organize instruction, besides which he often had to take responsibility for several important functions as the cultural and social leader of his village.

Among the advantages mentioned were that this type of school fostered students ability to work independently, and the importance of the teacher in the cultural life of the village: (a) the initiative and individual studies of the students are encouraged; (b) training in comradeship, helpfulness and responsibility; (c) individual attention and better contacts between teacher and students; (d) better co-ordination and continuity in instruction; (e) this type of school makes it possible for students to be taught together with their brothers and sisters, and so on.

3. *The Pedagogical Problems of the One-Teacher System*

The pedagogical problems of the small schools are directly related to the problem of internal organization. Two things are decisive: the division of the students into classes and the division of subject matter into separate subjects. They are the two forms of structure called "departmentalization" and "grading" in the American discussion. Non-departmentalized instruction is unnatural if it is led by several teachers. This form of instruction is now found in the class teacher's work.

The introduction of grading with year groups or stages arranged stepwise has led to the specialization of teachers and the abandonment of the one-teacher system.

The longer the duration of compulsory school attendance, the more difficult it will become for the individual teacher to master all tasks, and thereby for the one-teacher system as such. The demand for division into subjects and grades causes serious problems for rural schools, particularly as, in urban schools, division into subjects and grades is taken as a criterion of progress and development.

Thus, it is clear that the school problems of sparsely populated areas have many dimensions. There are many problems which, when viewed from the angle of rural schools, seem different when seen from the aspect of urban schools. Innovations and reforms are usually introduced in towns. It is often found afterwards that these innovations and reforms cannot, or can only with difficulty be introduced into rural schools. One often hears, therefore, that "educational reform is a rural problem," "timetables are a problem of school buses," "special instruction is a centralization problem," and so on.

4. Problems of Centralization

The school is an assembly point. If the students live far from the school, the assembly of students will be time consuming, tiring and expensive. When the students are removed from what in other connections are considered to be their natural assembly points, the term centralization is used. First, perhaps, the children must be collected by a bus or other means of transportation and then taken from their place of residence to another place, where school attendence is centralized. The boundary between centralized and uncentralized instruction is, of course, diffuse. Centralization is applied in towns as well as in rural areas, but it is of far greater significance for the students in the country than for those in towns. The school bus is the rural school children's ruler in quite another way.

For the student, centralization is manifested in such obvious things as that he must get up half an hour earlier in the morning to get to school in time, and he gets home half an hour later. Thus the school day is prolonged by one hour and the school year by 200 hours. It seems very likely that this should tire him. Study-minded and concentrated students may be able to spend part of this time doing homework, but it is hardly likely that this can be done regularly. Thus rural students run the risk of achieving poorer study results on account of this tiredness than they would otherwise have achieved. It may therefore be hypothesized that, everything else being equal, the performance of students who have to travel to school by bus is poorer than it would otherwise have been.

One advantage claimed for centralization is that students, by being moved to a larger school in a town, or to a less sparsely populated area, will enjoy certain cultural and other stimuli which should improve their performance. The commercial life of the urban area, street life and communications, services and public facilities, the library of the larger school and richer equipment in school institutions are what the student finds more of than in his home district. The difference between the school town and the home district may be small, but for the student group as a whole, the effects should be discernible. It is this richer school environment that is the aim of centralization.

Centralization and the transportation of students may seem to be problems of sparsely populated areas only. A study of the frequency of student transportation shows, however, that this is not so. It is in densely populated countries that such transportation is most common. This is shown in both the relative and absolute figures. In the United States every third student in the compulsory schools is taken to and from school by bus, car or other means of transport. In a report on student transportation, S. Cooper states that more than 9,500,000 students are transported at a cost of 330 million dollars a year, which is equivalent to 4.5 per cent of the total costs of schools at this level.3) These data refer to 1955. Current figures are probably higher.

There were, in 1965–66, about 878,00 students in the compulsory schools of Sweden. Of these approximately 240,000 or 27.3 per cent were transported to school, at a cost of 119,000,000 crowns, i.e. about 500 crowns per student and year. If this is related to the total costs of education in the compulsory school, which were about 2,800 million crowns, it will be found that with 4.2 per cent of the total costs of education expended on transportation of students, costs per pupil seem to be higher in Sweden than in USA. This because Sweden is more sparsely populated and distances to schools greater. A phenomenon observed during recent years, seen earlier in the United States, is that transportation of students has also increased in towns and urban areas. In this case, safety in traffic demands the establishment of a well-organized system of transport, and as the structure of the school has been altered with the specialization of education, students need transportation in towns, too, to satisfy specific demands on education. We are not concerned with this problem here, however, but with problems of transportation due to the sparsity of population in a region, great distances to schools and the smallness of the schools. Nor will we concern ourselves primarily with the administrative, economic and organizational problems, but with pedagogical and school hygienical questions.

5. *Problems of Innovations*

It has been mentioned above that innovations and improvements in the school are easier to introduce in towns than in rural areas. This is true of both internal pedagogical and external organizational innovations. A couple of examples from experimental activities in Sweden during the 1950's will illustrate this.

Regulations making reinforced instruction possible in B-classes (B-classes are multigrade (B2) or double-grade (B1) classes) by dividing them into half classes have been in existence since 1935. These regulations allowed teachers to work with smaller groups; students belonging to a single year-group, for example, in a B-class. These reinforcement arrangements were augmented during the 1940's, but it was not until the middle of the 1950's that they were systematized. In grades 5 and 6 the reinforcement instruction was in English and mathematics. Table I shows how possibilities of reinforcement were utilized during the experimental years.

It will be seen that possibilities of reinforcement were utilized to 76.1 per cent in English and 72.1 per cent in mathematics. A-classes (single-grade classes) attained utilization percentages of 85.2 and 86.1 respectively. B1-classes had lower percentages and B2-classes and B3-schools (one-teacher schools) still lower.

This illustrates the difficulties with pedagogical innovations in schools in sparsely populated regions. Possibilities of reinforcement were allowed generally, but it was in rural schools that they were most needed, but the table shows that those needing them most found it most difficult to take advantage of them.

According to an investigation, the transportation of students was the most serious obstacle. Even without reinforcement instruction, the younger students had to wait for the older ones travelling by the same bus; for the older ones had considerably longer school days. A division of the higher classes for reinforced instruction might result in a still longer wait for the young pupils. The possibilities of organizing extra buses are restricted by both financial and organizational factors. The school bus system in a large municipality may often require many connections, changes of vehicle and shuttle traffic. And when transportation to and from a school makes certain permitted forms of class division difficult or impossible, this does not affect only the students travelling by bus, but all the students in the school.

TABLE I

*Utilization of Reinforcement Instruction in English and Mathematics in Grades 5 and 6, 1957/58 **

Type of class	English in grades 5 and 6: Possible number of lessons a week	English: Lessons utilized: Number	English: Lessons utilized: %	Mathematics in grade 6: Possible number of lessons a week	Mathematics: Lessons utilized: Number	Mathematics: Lessons utilized: %
A	10,693	9,111	85.2	2,850	2,454	86.1
B1	2,840	1,431	50.4	1,411	702	49.8
B2 and B3	738	312	42.3	384	191	49.7
Total	14,271	10,854	76.1	4,645	3,347	72.1

*) (According to an investigation made by the Ministry of Education, 1958).

A similar consequence was that in the lower classes it was quite frequently necessary to accept a "poorer" alternative timetable than the regulations allowed. According to the 1955 curriculum, classes of infants could, in certain circumstances, be divided into half classes to help the pupils to learn reading. (This form of division became generally applicable in the new timetables of the comprehensive school from 1962). Transportation of students caused about 20 per cent of the classes in grades 1 and 2 to follow a timetable with less division into groups than was justified by the numbers of pupils per class (Table II).

TABLE II

Restrictions in Divisions into Groups of Grades 1 and 2
Classes 1957/58

Classes comprised	Proportion of classes not taking advantage of possibilities of division into two halves
Grade 1 only	16.8%
Grade 2 only	11.4%
Grades 1 and 2	33.3%

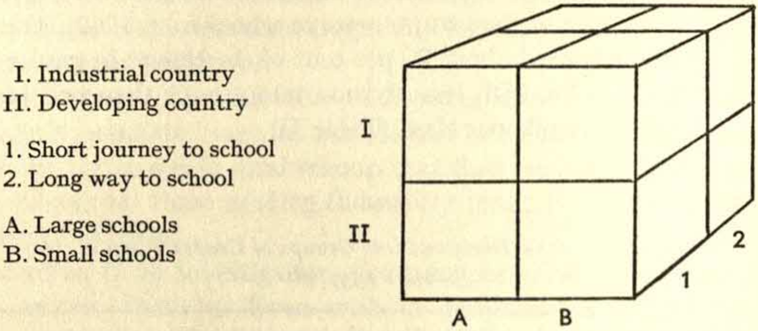
Here the same phenomenon is repeated. Reinforcement by dividing classes into two halves was obviously most necessary when a teacher had both grade 1 and grade 2 children in a class. This provides more of the desired possibilities of individualization. But in this case the small schools were helped least, although they needed most help.

Examples of the opposite may be mentioned, i.e. when innovations have been a great help to small schools perhaps more than to large ones. One of these is wireless instruction in English, which has been carried on very successfully in rural areas. The fact remains, however, that schools in sparsely populated regions are in a more difficult situation than schools in towns not only in respect of external organization but also in respect of pedagogical innovations.

6. *An Attempt to Structurize the Problems of Rural Schools*

The catalogue of problems drawn up here is by no means exhaustive. But it is probably sufficiently long to show how varied the pedagogical problems of sparsely populated areas are. As always, the task is to structurize a problem before it can be studied in detail. Otherwise there is a great risk that potential cause factors may be confused, and it will then be impossible to know what effects are evaluated and what correlations are obtained.

It is important in such problem structuring to restrict generally possible overlapping dimensions and to limit their number. At the risk of some simplification, the problems discussed in the previous section can then be arranged in the following three-dimensional diagram.



Dimension I–II refers, as will be seen, to the cultural and economic-geographic structure in which the problem arises. As shown by the Geneva investigation reported above, pedagogical problems of sparcely populated areas exist in both highly developed industrial countries (i-countries) and developing countries (d-countries), although with only partly common features.

The second dimension, A–B, refers to size of schools. Rural areas have small schools, but there the authorities sometimes choose to centralize and transport students to larger schools.

The third dimension, 1–2, refers to the length of the journey to school or – which is another way of expressing the same thing – the time it takes to get to and from the school.

This gives, if each variable is divided by two, a system with eight different types of school. II-B-1 we recognize as the one-teacher school of the d-country type mentioned in the Geneva report. I-A-1 may be a school in a large town, I-A-2 a central school in a geographically large rural municipality, etc. Thus not all types represent rural schools, but they are included as correlates of or contrasts to such.

The model is intended to elucidate the fact that no simple comparison can be made between A and B or between 1 and 2, which has most often been done in previous investigations. If variations in one dimension are to be tested, it is important to keep the others constant. (Naturally, there are several hypothetical causal factors to keep constant, but most of these are of a more general type, and less intimately related to our problem of sparsely populated regions).

If the model can be made simply three-dimensional, the magnitude of the problems is much greater. The following are probably the main problem areas.

1) External organizational problems, referring to general planning. An important factor here comprises economic problems, i.e. what the individual student's education is to cost. This also includes problems of centralization, transportation of students, and related problems of safety in traffic.
2) Internal organizational problems. These refer to the curricula and timetables of the school, the organization of subject matter, division of subjects and integration of subjects. The latter problems are closely related to the specialization of teachers in different subjects and/or levels.
3) Problems of pedagogical innovations. These are changes in the internal and external conditions of instruction according to (1) and (2) above, the forms and rate of these changes, and the introduction of new conditions.
4) Problems pertaining to the school as a cultural and social institution. The most important of these is, perhaps, the degree of similarity or dissimilarity between school and home and between the place where the school is situated and the place of residence of the students. This involves not only the rivalries between town and country, but also antagonism due to differences in language, race and religion, etc.
5) Problems of school hygiene. These include how the physical and mental well-being of the students affects their optimum development. Of special interest here is whether, and if so how, the long journeys to school have a tiring and performance-impairing effect.

Dimension I–II, i.e. i-country *versus* d-country, will be ignored here. An empirical study of this requires an extensive international research apparatus. The investigations to be reported here are instead aimed at testing the implications of the variations in the other two, i.e. problems pertaining to size of school and distances between home and school. Each of these has been studied separately already, but as far as can be ascertained, they have never been related to each other. Thus the present study will account for the significance of size of school, with distance kept constant, and distance to school with size of school kept constant. (Of course, as will be shown later, other factors were studied, too.) These are of great interest from the aspect of rural schools.

II. The Problems of Small Schools

1. Previous Investigations

Quite a number of studies on rural schools have been published in the United States.[4]) But only to a small extent have attempts been made – or even been considered possible to be made – to investigate how far students at small schools obtain as good results as students of large schools. Cooper says in a summary:

"Most studies comparing large and small schools have judged them on standards which are functions of size. It is possible that the many seeming disadvantages of small schools will disappear when these schools develop and adopt procedures as well suited to them as most present procedures are suited to large schools." [5])

Practically all the differences found were in favour of the large schools. There is nothing astonishing in this, however, since no serious attempts seem to have been made to obtain comparable results. Curricula and timetables were different. The small schools had shorter courses and fewer subjects. Textbooks were of a lower quality – or at least cheaper. The teachers had had a shorter period of training, and were paid lower salaries, and so on.

All this is partly a consequence of the local organization of schools. Local autonomy has often been regarded as a source of strength in the educational systems of Anglo-Saxon countries. French or Swedish schools, with their central leadership, may be taken as contrasts. There is no doubt at all that the former system handicaps schools in sparsely populated regions. The results of American studies are not, therefore, of any great interest. It is more important to study whether a small school leads to worse results compared with a large school where comparisons can be made. In other words, give small schools the same curricula and timetables, and teachers with the same training and salaries as large schools, and then study the differences. Such an investigation can hardly be performed in a decentralized system such as the Anglo-Saxon one. There are much greater possibilities in Sweden.

In the new Swedish school, serious attempts have been made to attain equality between town and country. Even the centrally fixed tests of knowledge and their evaluation are therefore the same for large and small schools.

2. Comparisons Between A, B1 and B2 Schools

Population. The investigation population was restricted to normal sixth-grade classes in the compulsory school. The classes were chosen according to municipality, all classes in a municipality being studied. The reason for this was to prevent individual teachers from having the feeling of being observed. For technical reasons it was desirable to use whole municipalities; the distribution and collection of forms could then be done by way of the education offices of the municipalities.

Data on municipalities and classes were obtained from the county education committees. The population was restricted to six counties, with twenty-eight municipalities: seven small towns and twenty-one rural municipalities. Together they had 161 sixth-grade classes. Results were obtained from 158 classes. Eight of these were excluded, for they had had changes of teachers during the previous scholastic year. The remaining 150 classes had a total of 3,691 students, of whom 2,608 were in the sixth grade (Table III). Of these latter, 2,476, or 94.6 per cent had, on the whole, complete results.

TABLE III

The Investigation Population According to Type of Class

Type of class	Number		
	Classes	Students Total	Students Whereof in grade 6
A	67	1,804	1,804
B1	56	1,346	649
B2	27	541	155
Total	150	3,691	2,608

The distribution of classes and students according to type of school and size of group is shown in Table IV. These data are included because type of school and size of class are positively correlated, which makes it necessary to endeavour to keep size of class constant in the investigations.

TABLE IV

Number of Classes and Students in the National Sample Distributed According to Type of Class and Size of Groups

Size of class	Number of classes				Number of students			
	A	B1	B2	Total	A	B1	B2	Total
11–15	0	2	4	6	0	25	50	75
16–20	13	9	10	32	242	147	182	571
21–25	14	23	10	47	321	534	229	1084
26–30	14	16	3	33	392	445	80	917
31–35	26	6	0	32	849	195	0	1044
Total	67	56	27	150	1804	1346	541	3691

Variables. Standardized achievement tests in reading, writing, mathematics and English, and Uppsala tests in history, geography and nature studies were used as criterion variables. In some contexts the results in each subject are reported separately, in others the total performance in all subjects is given.

The results obtained in the above-mentioned tests form the independent variables. These are defined in greater detail in the section dealing with testing instruments.

The independent variables consist of types of class, i.e. categories A, B1 and B2. The other variables are control variables. Size of class, intelligence of students, and teachers' qualifications were considered here.

Size of class was defined as number of students in the class, in the size groups 11–15, 16–20, 21–25, 26–30 and 31–35 students. Classes smaller or larger than these were very few in number, and difficult to get in touch with.

Students' intelligence is defined by conventional group intelligence tests. Intelligence was kept constant by statistical methods.

The teacher factors could be controlled only to a limited extent. All classes had teachers fully qualified for their posts. Classes in which changes of teachers had occurred during the previous year were excluded. Thus all the students included in these tests had had their teachers for at least one scholastic year.

Testing instruments. All the tests set were group tests. They were administered and performed according to relevant instructions during the latter part of the spring term in grade 6. In schools of the B1 and B2 types only students equivalent to the corresponding A-classes, i.e. only grade 6, were tested.

All the results were given on a seven-point scale, except results of the intelligence tests, which were made on an eleven-point so-called C-scale (0–10).

The testing instruments were standardized and tested for reliability in the usual way. Table V gives the reliability coefficients of the various tests.

To sum up it may be said that the coefficients of correlation for the subjects as a whole and for the intelligence test suggest a satisfactory degree of freedom from random influences – although the figures for individual subtests are not particularly high. Since the investigation is concerned with group comparisons, reliability must be regarded as satisfactory.

The validity of the standardizet tests and the Uppsala tests is expressed in Table V in the correlation between test scores and end-of-term marks

TABLE V

Survey of Testing Instruments

Subject	Test	Reliability [a])	Validity [b])
	Standardized test		
Reading	Reading comprehension	0.81	0.46
	Knowledge of words	0.83	0.49
Writing	Disposition	—	0.54
	Grammatical correctness	0.90	0.53
	Expressions	0.80	0.43
	Punctuation a	0.77	0.50
	Spelling a	0.83	0.63
	Spelling b	0.91	0.67
Mathematics	Mechanical arithmetic	0.87	0.60
	Applied arithmetic	0.75	0.63
	Mental arithmetic	0.86	0.53
	Compound arithmetic	0.88	0.65
	Arithmetic test	0.74	0.64
English	Reading comprehension	0.85	0.71
	Sentences	0.83	0.70
	Listening	0.81	0.67
	Pronunciation	0.85	0.61
	Uppsala test		
History	History	0.93	0.79
Geography	Geography	0.91	0.76
Nature studies	Nature studies	0.86	0.73
Intelligence	Problem solving B	0.89	—
	Dureman-Ahlström		
Intelligence	Group test for class 5	0.90	—

[a]) For the Dureman-Ahlström group test according to the split-half method; for the other tests according to Kuder-Richardson (20).

[b]) Correlation with autumn marks in the respective subjects.

for the standardization population. Such a measure of validity, which is of the concurrent validity type, is probably the only one that can be accepted.

The types of school in categories A, B1 and B2 comprise individual determinations in the present investigation. They are regarded as environmental factors for the individual students. The significance of type of school can then be tested by comparing the performances of students in A, B1 and B2 types of school.

Results. Table VI gives the results of the tests. It will be seen that students in large schools (A-classes) performed better than small school

TABLE VI

Results in Various Subjects (7-point scale with $M = 4$ and $S = 1$) and in Intelligence (11-point scale with $M = 5$ and $S = 2$)

Subject	A			B1			B2		
	n	M	S	n	M	S	n	M	S
Reading	1720	3.91	1.00	571	3.82	1.09	155	3.65	1.10
Writing	1694	3.91	1.02	567	3.88	1.09	155	3.77	1.10
Mathematics	1712	3.99	1.04	568	3.84	1.10	154	3.84	1.06
English	1652	3.92	1.07	531	3.69	1.11	97	3.77	1.12
History	1699	3.87	1.03	552	3.65	1.02	153	3.86	1.10
Geography	1693	3.91	0.87	567	3.61	0.94	154	4.08	0.85
Nature studies	1687	4.09	0.95	561	3.64	1.03	153	3.90	1.04
Total seven subjects	1686	3.93	0.80	533	3.71	0.90	153	3.82	0.88
Intelligence	1720	5.07	2.11	571	4.57	2.40	155	4.75	2.07

students (B1 and B2) in all subjects, i.e. in reading, writing, mathematics, history, geography and nature studies. (The fact that B2 students had better scores in geography does not alter this, for there were very few such students).

From this one might be inclined to jump to the conclusion that it is now proved that rural schools cannot compete with urban schools in respect of students' results. This is the conclusion arrived at in American studies.

If, however, we go a step further and keep other potential causal factors constant, the picture is somewhat different. In the first place, Table VI shows that the A-classes have the most intelligent students. Can the superior results in the A-classes be explained by this factor alone?

The answer to this question is given in Table VII, which reports the analysis of the covariance of the differences in scores between A, B1 and B2, showing four different sizes of class. The adjusted values in column 10 then show the students' scores when related to the same level of intelligence.

This analysis was not performed for each school subject separately, but for the seven subjects taken together. In view of the fact that the subjects were, generally speaking, in the same relations to type of school, this can hardly be regarded as erroneous.

The following can be derived from Table VII. In the small classes (16–20 students), the rural schools attained as good results as urban schools. The

TABLE VII

Total Performance in Different Types of School

1 Size of class	2 Type of class	3 n	4 X	5 s_x	6 Y	7 s_y	8 r_{xy}	9 b_{yx}	10 Y^1	11 F P
16–20	A	238	5,26	2,02	3,88	0,85			3,83	
	B1	48	4,46	2,01	3,59	0,88	0,61	0,26	3,75	1,06
	B2	49	4,84	2,12	3,76	0,92			3,82	
	Total	335	5,08	2,06	3,82	0,88	0,63		3,82	
21–25	A	284	5,09	2,03	3,79	0,82			3,75	
	B1	220	4,81	1,99	3,71	0,90	0,61	0,26	3,75	2,13
	B2	68	4,85	2,10	3,86	0,91			3,89	
	Total	572	4,95	2,04	3,77	0,86	0,61		3,77	
26–30	A	354	5,26	1,98	3,99	0,84			3,95	
	B1	161	4,92	2,08	3,68	0,89	0,68	0,29	3,74	8,97***)
	B2	22	4,82	1,47	3,81	0,82			3,90	
	Total	537	5,14	2,00	3,89	0,87	0,68		3,89	
31–35	A	810	5,20	1,90	3,96	0,76			3,97	
	B1	98	5,34	2,28	3,79	0,94	0,59	0,24	3,76	7,50**)
	B2	—	—	—	—	—			—	
	Total	908	5,22	1,95	3,94	0,79	0,60		3,94	

x = Intelligence in grade 6.
y = Mean performance in reading, writing, mathematics, English, history, geography and nature studies.

**) Significant at 0.01 level
***) Significant at 0.001 level

same is the case in the somewhat larger classes (21–25 students). With a further rise in size of class, the urban schools are superior. A survey of the comparisons is given in Table VIII.

Of a total of ten comparisons between urban and rural schools, there is no difference between students' performances in eight cases. The remaining two cases refer to large classes. The conclusion is, therefore, that with small classes, students' intelligence, the curricula and timetables of the schools and, to a certain extent, the teacher factors being equal, rural schools provide as good an environment for the students' acquirement of knowledge as urban schools. If this is generally valid, and for the time

Table VIII

Comparisons, with Constant Size of Class, Between Students in Urban Schools and Rural Schools in Respect of Total Performance in Reading, Writing, Mathematics, English, History, Geography and Nature Studies

(Summary of Table VII)

Size of class	Number of group comparisons with Urban schools superior	Schools in densely and thinly populated regions the same	Rural schools superior
16–20	0	3	0
21–25	0	3	0
26–30	1	2	0
31–35	1	0	0
Total	2	8	0

being this must be assumed, the result is extremely encouraging for rural regions. This should imply that the presence within one and the same class of different groups of students need not impair performance. The encouraging thing in this is mainly that rural schools can be helped economically and organizationally, and that the purely pedagogical problems may be smaller than has been thought.

III. The Problem of Long Journeys to School

1. Previous Studies

We will leave the problems of small schools for the time being, and consider the problem of long distances to school. Numerous investigations have been made of the problems of student transportation from the aspects of school administration and school organization. Almost without exception, these investigations are descriptive and, from scientific aspects, often of secondary interest.6)

Investigations and recommendations are always made to give pedagogical advantages, although few attempts have been made to measure the advantages. And above all they are of value as a platform for more controlled studies, which are unavoidable in the long run. As far as my knowledge goes, only three studies have been made in which students' performances were related to transportation to school. They were all made in Sweden.

The first was made by Gunnar Boalt,7) and dealt with the problem of how the junior secondary school certificate was affected by the students' journeys to school. He took two groups, one living a short distance from the school and the other living a long way off. The boundary between them was fixed at 133 minutes' journey a day. The longest journey took 265 minutes. The correlation between duration of daily travelling and the junior secondary school certificate was –.18, which deviates significantly from 0. Thus pupils who have to make long journeys to get to school have lower marks than those living near the school. The correlation proved, however, to be more complicated, in that there were subgroups for which the correlation was positive. From this Boalt concluded that some students had spent their travelling time studying their lessons, and thus improved their marks.

In a similar study of 232 junior secondary school students, Tore Österberg [8]) compared the final marks for three main groups of students with each other, namely (1) those living in the same place as the school, (2) those in lodgings in the same place as the school and (3) those travelling to and from school every day. Österberg found significant differences in mean marks between the groups, which, in respect of final marks, were ranked as above. Those travelling to and from school had the poorest results. There were no significant differences between the groups on entry to the school, which may, at least to some extent, be regarded as a control. Österberg found other differences between the groups, too. Thus the frequencies of absenteeism and form-repeating were higher among those travelling to and from school than among the others.

A somewhat more controlled study of travelling and non-travelling students was made by Hans Peterson. [9]) He studied students in the second, fourth and sixth grades of the elementary school, comprising 14, 11 and 11 classes respectively. The students' results were expressed in scores in standardized tests in Swedish and mathematics, in addition to which intelligence tests were administered. The variables were therefore satisfactorily reliable. A certain control was obtained by checking parents' education and the health of the students. The students were divided into two groups, one living near the school and the other with at least 30 minutes' journey to school.

Peterson studied the differences between the two groups by the method of covariance analysis, with intelligence as control variable. In a total of fifty comparisons only slight differences were found, and only one of the differences was significant. Nor were any differences found between commutors and non-commutors in a number of ratings made by the teachers. These ratings referred to students' adjustment to school, how "awake" they were at the beginning of the school day and degree of tiredness at the end. Nor did the groups differ in a special stamina test. From this Peterson came to the conclusion that the common view that travelling to school impairs study results cannot be accepted off-hand.

2. Comparisons Based on Travelling Distance

The problem. As mentioned earlier, the problem we are concerned with is whether travelling to school is tiring, and has in general an impairing effect on students' performances. Against this may be placed the positive effect of the students' transfer from an intellectually less stimulating environment.

It is difficult to determine the mutual effect of these two factors. Possibly, as has been suggested earlier, the stimulating factor compensates for what is lost by the tiring factor. To ascertain how the hypothetical exhaustion factor acts as such, the effects of the stimulating factor should, if possible, be kept under control. One way of doing this, or at least of reducing the effects of this factor, is to keep type of school constant, i.e. to study A, B1 and B2 schools separately.

The reasons for this are the following. If a student lives in a rural area and travels to a town, the difference between his place of residence and the school town must be stimulating and performance enhancing. If the student lives in a sparsely populated region and commutes between home and a rural school, there is little or no difference between place of residence and the school surroundings. Here no performance enhancing factor acts in the same way as in the previous case. Instead the fatigue factor causes impairment of performance.

Since the transportations of students were all concerned with purely rural areas, the fatigue factor should have a greater effect when students are taken to B2-schools than when they are taken to B1-schools, and these in their turn greater than when they are transported to A schools.

This double effect of commuting to school has been ignored in previous investigations. Here, as a new variable, the urbanization difference between place of residence and school centre is introduced.

The investigation population here was the same as in the previous study, i.e. as shown in Table III.

Results. Table IX gives the outcome of this testing. The students were divided into two groups according to distance travelled to and from school, with four kilometres as boundary. According to current regulations, municipalities received state grants to defray costs of transportation of students living four kilometres or more from the school.

It may be open to discussion whether the number of kilometres is a relevant determination. Travelling time might just as well or even better

TABLE IX

Total Performance in Comparison with Distance to School

1	2	3	4	5	6	7	8	9	10	11
Type of school	Distance to school	n	$\bar{x}$	s_x	$\bar{y}$	s_y	r_{xy}	b_{yx}	$\bar{y}^1$	F
A	0–3	556	5.11	1.92	3.87	0.79	.63	.91	3.92	0.06
	4–	160	5.36	1.97	3.92	0.90	.69		3.74	
	Total	716	5.16	1.93	3.88	0.81	.65		3.88	
B1	0–3	242	4.99	2.18	3.85	0.91	.77	1.07	3.98	0.30
	4–	163	5.29	1.95	3.96	0.89	.71		3.77	
	Total	405	5.11	2.10	3.90	0.90	.75		3.90	
B2	0–3	48	4.90	2.31	3.89	0.98	.78	1.06	3.89	0.61
	4–	30	4.90	1.85	3.77	0.91	.62		3.77	
	Total	78	4.90	2.14	3.84	0.94	.73		3.84	

x = Problem solving
y = Mean performance in reading, writing, mathematics, English, history, geography and nature studies.

have been taken. As a top limit, the school authorities have recommended 45 minutes' transport which, together with the walk to the bus stop, may amount to an hours' travelling time to school and another hour back home. Occasionally, especially for older students, this limit is exceeded. In very sparsely populated regions, the journey to school may be one of fifty kilometres, i.e. 100 kilometres every school day.

The results suggest that students with varying distances to school did not differ significantly in their results. The F-quotients do not attain significant level anywhere.

In the analyses, distance to school was the independent variable and the students' combined scores in the seven school subjects the dependent variable. Intelligence was used as control variable. Hypothetically, long journeys to school impaired students' learning. But it may also be feared that long journeys to school had a negative effect on scores on intelligence tests. If so, and if this effect is similar, it is not much use consistently correcting results of knowledge to the same level of intelligence for short and long journeys to school.

There is good reason, however, to regard these fears as exaggerated. Knowledge and skills, i.e. factors forming our dependent variable, should feasibly be more sensitive to the fatigue effect than intelligence. The effect of the former will accumulate in quite another way, since the measurement refers to the total product at the end of the scholastic year. Each task or score in tests of knowledge must be based on what was learned earlier, and the adverse effect of the daily strain of long journeys should be greater than in measurements of intelligence.

A detailed analysis of the differences shown in Table IX gives the following corrected values ($\overline{Y}^1$).

	Short journey	Long journey
A	3.92	3.74
B1	3.98	3.77
B2	3.89	3.77

In all cases, students living near to the school have better results than the others. This uniformity is interesting, even though the differences are not significant.

Inference. The inference to be drawn from the above results is not immediately clear. The total picture calls for further testing. A measure sometimes used in calculations of this kind is the AQ (accomplishment quotient), i.e. the quotient of performance and intelligence. This is calculated according to the formula $AQ = (Y/X) \,.\, 100$. The quotient Y/X expresses performance in relation to intelligence. (The purpose of multiplication by 100 is to eliminate the decimals, in the same way as in the calculation of the IQ. The AQ will then be about 100; it is assumed that X and Y have been transformed to the same scale, which was done here). An AQ below 100 implies that the student, in relation to his score on intelligence tests, is "under-performing." A quotient above 100 means that he is "over-performing." Transferred to AQ the results are as follows:

	Short journey	Long journey	Total
A	100.5	96.7	99.2
B1	102.9	99.2	100.6
B2	104.5	101.8	103.2
Total	101.5	98.2	100.0

The quotients are undoubtedly interesting, for they decline with rising size of school. The rank orders are consistent both vertically and horizontally. Randomly this can occur only once in thirty-six times (the categories are 3 × 2 = 6), which gives significance at the 5 per cent level. The AQ is not, of course, a fully satisfactory determination. Nevertheless, it seems as is, with further, more detailed analyses, the following hypotheses can be enunciated:

1. The prospects of pupils' realizing their inherent developmental potential are better in small schools than in large ones.
2. Students with a long way to school find it more difficult to realize their inherent developmental potential than students living near the school.

The practical consequence of a verification of these hypotheses would be that centralization of students in large schools – perhaps involving long journeys – is not pedagogically justified.

IV. Conclusions

The results refer to grade 6, at the class-teacher level. We cannot deny the possibility that centralization at higher levels may have other pedagogical and organizational consequences. There seems no doubt that centralization to large units has a number of obvious advantages. It gives students greater possibilities of choosing lines of study and of specializing. It makes it possible to care for handicapped students better, makes better equipment available, and so on. Nevertheless, what has been found shows that care must be taken in centralization, particularly of young pupils. Centralization may have an upper limit; the distance between home and school may be so great that the negative results outweigh the positive ones. Further, the school to which centralization is made may be of doubtful quality, and the gains expected may not be forthcoming. In other words, the larger school must be able to take advantage of its greater pedagogical possibilities. It is not least this that justifies research on the school problems of sparsely populated regions, the problems of small schools and of long journeys to school. In the long run, it may help not only students living in rural areas, but all students.

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[3]) *Encyclopaedia of Educational Research*, 3rd ed., New York: Macmillan 1960. Sections by S. Cooper *et al.*: "Pupil Transportation", pp. 1543–50, p. 1544, and "Rural Education", pp. 1166–78.

[4]) See *One-Teacher Schools Today*, Washington: National Education Association, Research Division 1960.

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[6]) All this work is nonetheless important, for it gives the back-ground description, without which a more implicit analysis is impossible. Among works of this type are the Geneva reports, mentioned in ref. 1) and 2). In the United States investigations have been made by DUNN, 1951; EVERETT, 1949; FERNIG and MCDOUGALL, 1956; FOX, 1956; NEA, 1948, 1953, and 1956; CULP, 1950, and others. In Sweden a few examples may be mentioned from a long series of State investigations: The Taxation Equalization Committee, *SOU* (*Statens offentliga utredningar*), 1933: 4; The Elementary School Commission, *SOU*, 1935: 18; The Population Commission, *SOU*, 1938: 6; The Elementary School Financial Committee, *SOU*, 1940: 36; The Norrland Commission, *SOU*, 1945: 33; The Local Boundary Commission, *SOU*, 1945: 39; The 1940 School Commission, *SOU*, 1943: 7 and 1946: 11; The 1946 School Committee, *SOU*, 1948: 27; The Local Boundary Commission, *SOU*, 1961: 9; The 1957 Education Committee, *SOU*, 1961: 30; and The Senior Secondary School Committee *SOU*, 1963: 14. To these must be added investigations made by the National Board of Education, e.g. a study of sparsely populated areas in 1957 and plans for the new senior secondary school in 1964.

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SCHULORGANISATION, SCHULWEG UND SCHÜLERLEISTUNG

von SIXTEN MARKLUND, Stockholm

Ein Schulproblem, mit dem sich die Bildungsforschung bisher sehr wenig beschäftigt hat, ist dies: leisten Schüler kleiner Schulen ebenso viel wie Schüler großer Schulen? Mit diesem Problem eng verbunden ist die Frage, ob Schüler mit langem Schulweg ebenso gute Schulleistungen erzielen wie Schüler, die nahe bei der Schule wohnen und keine ermüdende Anfahrt haben. Beide Probleme haben für Entwicklungsländer besondere Bedeutung, sie stellen sich jedoch – zwar in anderer Weise – auch in Industrieländern. Das Problem der Schulleistung wird daher hier in Beziehung zu folgenden unabhängigen Variablen erörtert: kleine Schulen – große Schulen, langer Schulweg – kurzer Schulweg, Entwicklungsländer – Industrieländer. Nach einer vergleichenden Behandlung der einklassigen Schule und der Wirksamkeit ihres Unterrichts in verschiedenen Ländern werden die Ergebnisse einer Untersuchung über Schülerleistungen in Schulen unterschiedlicher Größe und über Leistungen von Schülern mit Schulwegen von unterschiedlicher Dauer berichtet. Diese Untersuchung umfaßt etwa 1,800 Schüler der 6. Klasse (12 Jahre) schwedischer Grundschulen. Die Leistungen der Schüler wurden mit Hilfe von Tests in sieben Unterrichtsfächern: Lesen, Schreiben, Englisch, Mathematik, Geschichte, Geographie und Naturwissenschaften gemessen. Dann wurden sie mittels Kovarianzanalysen mit der Intelligenz der Schüler (als Kontrollvariable) verglichen. Andere unabhängige, konstant gehaltene Variablen waren: Klassenfrequenz, Ausbildung und Gehalt der Lehrer, Stundenplan und Lehrplan. Die Ergebnisse dieser Vergleiche von Schulen unterschiedlicher Größe sind in Tabelle VII wiedergegeben. Sie bestätigen die häufig vorgebrachte Hypothese, daß Schülerleistungen kleiner Schulen unter denen größerer Schulen liegen, nicht. Nur in Klassen mit mehr als 25 Schülern scheinen Schüler größerer Schulen bessere Leistungen zu erzielen. Im

großen und ganzen schneiden Schüler mehrklassiger Schulen etwas, wenn auch nicht beträchtlich besser ab als Schüler einklassiger Schulen. Ein entsprechender Leistungsvergleich von Schülern mit langem und kurzem Schulweg zeigt, daß Schüler mit langem ermüdenden Schulweg zu schwächeren Leistungen neigen als Schüler, die in der Nähe der Schule wohnen (Tabelle IX). Die zusammenfassende Übersicht beider Leistungsvergleiche (nun in der Form AQ) macht aufschlußreiche Beziehungen zwischen Schulgröße, Schulweg und Schülerleistung deutlich. Diese Beziehungen sprechen für die These, daß dem Schüler in einer kleinen Primarschule bessere Möglichkeiten zur Leistungsentfaltung geboten werden als in einer großen, und daß ein langer Schulweg diese Möglichkeiten beeinträchtigt. Dieses Ergebnis widerspricht der landläufigen Ansicht über die Wirksamkeit der Schulorganisation auf die Schülerleistung. Die Schulverwaltungen sollten daher vorsichtiger bei ihren Bemühungen sein, kleine Primarschulen zu größeren Schuleinheiten – meist für den Preis langer Anfahrten – zusammenzufassen. Jedenfalls sollte vorher genau geprüft werden, ob diese größeren Einheiten auch wirklich vorteilhaft sind.

ORGANISATION SCOLAIRE, TRAJET HABITATION-ECOLE, RESULTATS SCOLAIRES

par SIXTEN MARKLUND, Stockholm

Un problème scolaire que l'on a jusqu'à présent peu traité en recherche pédagogique est celui de savoir si les résultats des élèves sont aussi bons dans les petites écoles que dans les grandes. Un autre problème lié au premier consiste à savoir si les élèves qui doivent parcourir un long trajet pour se rendre à l'école, obtiennent d'aussi bons résultats que ceux qui vivent près de l'école et qui, par conséquent, ne doivent pas recourir à des moyens de locomotion fatigants.

Ces deux problèmes sont particulièrement significatifs dans les pays en voie de développement, mais ils existent aussi – sous une autre forme dans les pays industrialisés.

C'est pourquoi l'auteur se penche ici sur le problème des résultats scolaires en relation avec les variables indépendantes suivantes: petites écoles – grandes écoles; trajets habitation – école longs; trajets habitation – école courts; pays en voie de développement – pays industrialisés.

Après avoir fait un examen comparatif de la situation et des qualités pédagogiques des écoles à maître unique dans différents pays, un rapport a été fait sur les résultats d'une enquête relatifs au rendement des élèves dans des écoles de différente grandeur, et à celui des élèves qui ont différentes distances à parcourir pour se rendre à l'école. Cette étude concerne quelque 1800 élèves (âgés de 12 ans) qui se trouvent en 6^{0} année dans les écoles primaires suèdoises. Les résultats scolaires ont été évalués au moyen de tests portant sur sept matières: la lecture, l'écriture, l'anglais, les mathématiques, l'histoire, la géographie et les sciences. Les comparaisons ont été effectuées au moyen de l'analyse de covariance, en utilisant l'intelligence des élèves comme variable de contrôle. D'autres variables indépendantes gardées constantes furent: le nombre d'élèves dans une classe, la formation et le traitement des enseignants, l'horaire et le programme d'étude. Les résultats provenant de la comparaison d'écoles de différente grandeur sont indiqués au Tableau VII.

Ces résultats ne confirment pas l'hypothèse souvent formulée, selon laquelle les résultats scolaires seraient plus mauvais dans les petites écoles que dans les grandes. C'est seulement dans le cas où les classes ont plus de 25 élèves que les résultats semblent meilleurs dans les grandes écoles. Dans l'ensemble, dans les classes à niveaux multiples, les élèves obtiennent des résultats légèrement supérieurs aux élèves des classes à niveau unique.

Prenant la longueur du trajet depuis le domicile jusqu'à l'école comme élément de comparaison, l'enquête démontre que les élèves devant emprunter journellement un moyen de transport long et fatigant, ont des résultats inférieurs à ceux qui habitent près de l'école (Tableau IX). Un résumé de ces deux sortes de comparaison (maintenant sous forme AQ) fait ressortir des relations intéressantes entre la grandeur de l'école, le trajet à parcourir poùr se rendre à l'école et les résultats des élèves. Ces relations corroborent l'hypothèse selon laquelle les élèves d'une petite école primaire ont de plus grandes chances à obtenir de meilleurs résultats que dans une grande école primaire, et qu'un long trajet vers l'école nuit à leur rendement. Ceci infirme l'opinion générale relative à l'influence que peut exercer l'organisation scolaire sur le rendement des élèves.

On pourrait conclure en disant que les autorités scolaires devraient être plus prudentes lorsqu'elles essaient de centraliser – la plupart du temps au prix de longs trajets vers l'école – l'éducation primaire en de grandes unités. Au moins faudrait-il veiller tout d'abord à ce que ces grandes unités présentent de réels avantages.

ZUR BILDUNGSSITUATION DES DEUTSCHEN KATHOLIZISMUS

von KARL ERLINGHAGEN, Regensburg

Vorbemerkung

Aufgabe dieser Abhandlung ist es, das vorhandene Material zur Bildungssituation der deutschen Katholiken zusammenfassend darzustellen. Es geht also um eine Sekundäranalyse, nicht um eine eigens zu diesem Zwecke angestellte Erhebung jüngsten Datums und deren Interpretation. Gleichwohl soll es sich um "neue Erörterungen" handeln. Einerseits soll bereits veröffentlichtes aber bislang nicht zusammenschauend dargestelltes Material, aber auch solches, das noch nicht veröffentlicht wurde, als Ganzes dargeboten und gewürdigt werden, andererseits sollen in dieser Würdigung gegebenenfalls neue Gesichtspunkte zur Geltung kommen oder neue Akzente gesetzt werden.

Max Weber ist in seiner Strukturanalyse der Religionen den Wechselwirkungen von religiöser Bindung und innerweltlichem Verhalten besonders für die Entwicklung des Kapitalismus und die ihn tragende Geisteshaltung nachgegangen. Die "kapitalistische Wirtschaftsgesinnung" hat nach Weber aus einer bestimmten, durch die protestantische Ethik vorbereiteten Einstellung zum Leben entscheidende Impulse gewonnen.

Der Protestantismus spielt in der Entfaltung des Kapitalismus und des auf ihm basierenden modernen Wirtschaftslebens eine ungleich größere Rolle als der Katholizismus, was einerseits Resultat katholischer Daseinshaltung war und andererseits diese wiederum beeinflußte. In der Auseinandersetzung mit Weber, aber auch unabhängig davon, ist durch neuere Untersuchungen diese These teils bestätigt, teils korrigiert, in jedem Fall aber differenziert worden. Zu dieser Differenzierung sollen auch die folgenden Ausführungen beitragen.

1. Die "Fragwürdigkeit" der Fragestellung

Die Frage nach dem "katholischen Bildungsdefizit" in der Bundesrepublik Deutschland ist in einem doppelten Sinne fragwürdig.

Zunächst im Sinne der Notwendigkeit erneuter Untersuchung und Darlegung, die früher Vorgetragenes ergänzt, sei es nun, daß dargebotenes Material durch neues bestätigt oder in Frage gestellt wird, sei es, daß die an Hand von früher gesammeltem Material versuchten Analysen und Thesen durch neuere Einsichten erhärtet oder korrigiert werden.

Über den Anteil der Katholiken am Lehrkörper wissenschaftlicher Hochschulen war bislang nichts Verläßliches auszumachen.[1]) Erst eine neuere Untersuchung von Walter Nellessen gibt eine einwandfreie Auskunft.[2]) Verlaufsstatistiken liegen nicht vor. Solche Verlaufsstatistiken sind dagegen für die Studierenden der wissenschaftlichen Hochschulen, die Schüler an weiterführenden Schulen und Volksschulen und für die Lehrer dieser Schulen, für den Bund und die einzelnen Bundesländer (in einer trotz aller versuchten Genauigkeit freilich nicht voll befriedigenden Weise) dargeboten worden.[3]) Einiges wurde danach noch ergänzt.[4]) Private, sich auf begrenzte Gebiete beziehende und in der Untersuchungsmethode nicht immer zuverlässige Erhebungen liegen in nicht geringer Zahl vor. Sie sind meist unveröffentlicht und ergeben ein unterschiedliches Bild. Zum Teil bestätigen sie die These vom katholischen Bildungsdefizit, zum Teil weisen sie entgegengesetzte Entwicklungstendenzen aus. Dies ist der eine Grund, warum erneut nach dem "katholischen Bildungsrückstand" gefragt werden sollte: das Grundlagenmaterial muß neu aufgearbeitet werden, obwohl gerade die am meisten interessierenden Verlaufsstatistiken, die sich über längere Zeiträume erstrecken sollten, so gut wie nie vorhanden sind.

Aber auch aus einem zweiten, entscheidenderen Grunde ist die Frage nach dem "katholischen Bildungsdefizit" fragwürdig. Man muß die "soziale Gruppe" des "Katholizismus" oder "der Katholiken" in der Bundesrepublik sorgfältiger als das bislang geschah differenzieren. Dabei werden sich erhebliche Zweifel daran ergeben, ob man "die" Katholiken überhaupt als eine Gruppe bezeichnen darf, wenngleich sie in ihrer Gesamtheit juristisch als solche genau fixiert werden können. Zweifel melden sich aber vor allem hinsichtlich der Weberschen These von der wesensgemäßen unterschiedlichen innerweltlichen (politischen, wirtschaftlichen, wissenschaftlichen, kulturellen) Potenz der verschiedenen Religionen und Konfessionen an.

Die Frage ist nämlich: zeigen die Angehörigen verschiedener Konfessionen überhaupt ein eigenständiges unterschiedenes Gruppengepräge? Und weiterhin: zeigen sie es, weil sie dieser Konfession zugehörig sind, oder weil sie – auch unabhängig von ihrer Konfession – aus was immer für historischen und sozialen Gründen nun gerade dieser Gruppe angehören? Die Antwort muß natürlich die kulturpolitischen Maßnahmen mitbestimmen.

Wer ist "Katholik"? Und was ist der "Katholizismus" in der Bundesrepublik Deutschland?

Katholik im staatlich-juristischen Sinne ist, wer im Personenstandsregister als solcher eingetragen ist. Nach deutschem staatlichen Recht hängt die kirchliche Mitgliedschaft von der Entscheidung des einzelnen und ihrer wenigstens stillschweigenden Anerkennung durch die Kirche ab. Aus kirchlicher Sicht richtet sie sich nach den Vorschriften der Kirche. Nach katholischer Auffassung gehört jeder gültig getaufte Mensch zur katholischen Kirche, ist im strengen Sinn also Katholik, obwohl er die vollen Rechte in der Kirche nur genießt, wenn er mit ihr in Gemeinschaft steht. In dieser Abhandlung werden Katholiken im Sinne des deutschen staatlichen Rechtes genommen. Katholik in diesem Sinne ist also, wer irgendwann einmal zur katholischen Kirche gehört und bislang seinen Austritt nicht vollzogen hat.

Am 6.6.1961, dem Datum der letzten Volkszählung, waren von der bundesdeutschen Bevölkerung (ohne Berlin) 24.535.000, das sind 45,5%, katholisch; 27.120.000, das sind 50,2%, der bundesdeutschen Einwohner waren evangelisch; 2.323.000, das sind 4,3% zählten zu den "Sonstigen."[5]) Von 1871 bis 1961 nimmt der relative Anteil der beiden großen christlichen Konfessionen an der Wohnbevölkerung im Gebiete der Bundesrepublik (ohne Berlin) – läßt man gewisse politisch bedingte Anomalien während des Nationalzosialismus außer Acht – zwar ständig ab, der der "Sonstigen" ständig zu: Evangelische 1871 51,1%, 1961 50,2%; Katholiken 1871 47,5%, 1961 45,5%; Sonstige 1871 1,4%, 1961 4,3%.[6]) Die Katholiken verloren von 1939 bis 1950 0,6%, von 1950 bis 1961 noch einmal 0,3%, im ganzen von 1939 bis 1961 also 0,9% ihres relativen Anteils an der bundesdeutschen Wohnbevölkerung.[7]) Die Zahl der Austritte aus der katholischen Kirche (23.258) überstieg im Jahre 1961 nach kirchenamtlichen Angaben die der Übertritte (19.855) um 3.430.[8])

Aus den angeführten Zahlen ergibt sich aber auch, daß sich die beiden großen christlichen Konfessionen in ihrem relativen Mitgliederstand im Gebiet der Bundesrepublik erstaunlich gut halten konnten und ihr Verlust angesichts der großen geistigen und politischen Umwälzungen, die vor allem für die evangelischen Kirchen und ihr Verhältnis zum Staat von nicht geringer Bedeutung waren, eigentlich verschwindend gering ist (von 1939–1961 bei den Evangelischen 0,9%, bei den Katholiken 2%).

Dies darf jedoch nicht zu voreiligen Schlüssen verleiten. Es ist bekannt, daß die kirchliche Bindung im gleichen Zeitraum ganz erheblich nachgelassen hat. Dafür gibt es zwar keine zuverläßige punktuelle und erst recht keine Verlaufstatistik, aber die Tatsache selbst ist unbestreitbar und wird auch von offizieller kirchlicher Seite direkt oder indirekt unumwunden zugegeben. Man muß also schließen, daß sich hinter der rechtlichen Mitgliedschaft ein sehr großes Gefälle kirchlicher Bindung verbergen kann.

Unter "kirchlicher Bindung" müssen innere und äußere Bindungen verstanden werden. Die ersten bestehen im Jasagen zu allen kirchlichen Forderungen, die anderen im Mitvollzug der von der Kirche verlangten, nach außen hin sichtbar werdenden Verhaltensweisen. Dazu gehören z.B. der sonntägliche Gottesdienstbesuch, der jährliche Sakramentenempfang, die kirchliche Trauung, die katholische Kindererziehung, die die Schulerziehung mitbetrifft, u.Ä. Statistisch erfaßbar sind davon in erster Linie der sonntägliche Gottesdienstbesuch, der jährliche Sakramentenempfang, die kirchliche Trauung, Taufe und Beerdigung.

Kommunionempfang und Kirchenbesuch gelten im allgemeinen als sichtbares Zeichen religiösen Lebens, wenngleich dieses Zeichen vor allem in traditionsgebundenen Verhältnissen über ein lebendiges Glaubensleben oder die innere kirchliche Bindung kaum Auskunft gibt. Man spricht dann vom "Praktizieren" oder von den "praktizierenden Katholiken." Der sonntägliche Kirchenbesuch derer, die dazu verpflichtet sind, ist nach den kirchenamtlichen Zählungen, die von mehreren Untersuchungen der Meinungsforschung voll bestätigt werden (so: Jahrbuch der öffentlichen Meinung, 1947–1955, Allensbach 1956, S. 11), ganz erstaunlich hoch. Er lag 1955 über 60% im Bundesdurchschnitt der sonntagspflichtigen Katholiken.[9])

Der Grad der so meßbaren kirchlichen Bindung ist auf dem Lande allerdings bedeutend höher als in der Stadt. Er nimmt in dem Maße ab, als die Einwohnerzahlen der Gemeinden wachsen. "Eine Zusammenstellung der Großstädte in der Bundesrepublik ergibt, daß der Grad der kirchlichen Bindung in umgekehrter Proportion zur Höhe der Einwohnerzahl der Städte steht. Diese Abhängigkeit gilt in sehr ähnlicher Weise für Städte mit überwiegend katholischer Bevölkerung (etwa München), Diasporastädte (etwa Hamburg) und für Städte, in denen die Katholiken etwa die Hälfte der Bevölkerung ausmachen," [10]) wobei allerdings manche Städte des Ruhrgebiets, die trotz ihrer Größe weniger "verstädtert" sind, eine bemerkenswerte Ausnahme bilden.

Trotz allem bezeichnet sich die katholische Bevölkerung auch in den großen Städten als katholisch. Katholischsein im juristischen Sinne kann also einen erheblichen Mangel an kirchlicher Bindung, der bis zur vollen "Abständigkeit" geht, in sich schließen. Das kann nicht ohne Auswirkung auf das Erziehungs- und Schulverhalten bleiben. Die Zahl derer, die "weder gläubig noch kirchlich," aber auch derer, die "gläubig aber nicht kirchlich" sind, nimmt auch innerhalb der Kirche zu. Tatsächlich zeigt sich diese Haltung ja auch in offenkundiger Ablehnung der traditionellen kirchlichen Schulpolitik durch weite Kreise der katholischen Bevölkerung. Diese Ablehnung wird aber auch von vielen praktizierenden Katholiken, die man als "gläubig und kirchlich" bezeichnen kann, geteilt.

Für unsere Frage ergeben sich von daher folgende Schlußfolgerungen: träfe die Webersche These vom Einfluß der Konfession auf das Weltverhalten ohne Abstriche zu, so müßte bei den Katholiken mit geringer oder keiner konfessionellen Bindung ein anderes Weltverhalten manifest werden als bei den kirchlich stärker gebundenen, vorausgesetzt, daß keine anderen Faktoren bei diesem Bevölkerungsteil trotzdem zum gleichen Endergebnis führten. Wenigstens wäre in den großen Städten mit überwiegend katholischer Bevölkerung, aber geringem religiösem Leben (etwa München) kein signifikanter Unterschied zu anderen großen Städten (etwa Hamburg oder Berlin) zu erwarten. Dies trifft aber, wie schon früher aufgewiesen wurde,[11]) nicht zu. Große "katholische" Städte weisen bei zahlenmäßig relativ geringem kirchlichem Leben trotzdem ein erhebliches Nachhinken des katholischen Schüleranteils auf weiterführenden Schulen auf. Bereits diese Feststellung weist darauf hin, daß Konfessionalität und Schulbildungsstand nicht in einer eindeutigen Relation stehen.

Andererseits wäre zu fragen, ob sich hier nicht noch die in der unterbewußten Gesamteinstellung des katholischen Bevölkerungsteils zu höherer Bildung nachwirkende Haltung früherer Zeiten mit stärkerer religiöser Bindung geltend macht.[12]) Über die wahren, sehr komplexen Zusammenhänge werden wir immer nur zu Mutmaßungen kommen können.

Die Katholiken insgesamt sind in der Bundesrepublik keine regional geschlossene Gruppe. Ihr prozentualen Anteil an der Bevölkerung der bundesdeutschen Länder am 6.6.1961 schwankt zwischen 73.4% (Saarland), 71,3% (Bayern) und 7,4 % (Hamburg), 5,6% (Schleswig-Holstein).[13]) Gegenüber dem Jahre 1950 zeigen sich geringfügige aber doch interessante Schwankungen, die auf eine deutliche Binnenwanderung der katholischen Bevölkerung aus den ländlichen Gebieten in die Industriezentren schließen lassen.[14]) Auf die Regierungsbezirke, besser noch auf die Kreise bezogen, zeigt die Zugehörigkeit zu einer Konfession eine erheblich eindeutigere Regionalbezogenheit. So beträgt der Anteil der Katholiken im Landkreis Eiderstedt 2,4%,[15]) hingegen im bayerischen Landkreis Oberviechtach 97,1%.[16]) Je extremer der Anteil einer Konfession ist, umso unzuverlässiger wird der auf quantitativen Durchschnittswerten beruhende Vergleich der Bildungsaktivität der Katholiken mit den Nichtkatholiken. Immerhin könnte man hochprozentig katholische Landkreise mit ebensolchen evangelischen vergleichen, aber dann müßten andere Faktoren geographischer, geschichtlicher, politischer oder wirtschaftlicher Art diesen Vergleich wiederum als sehr zweifelhaft erscheinen lassen.

Auch die Gegenüberstellung ganzer Länder leidet unter diesem Gebrechen. Die Katholiken finden sich in allen Bundesländern, sodaß deren geschichtlich-wirtschaftlich-kulturpolitische Entwicklung auch für sie bestimmend geworden ist.

Die Berufszugehörigkeit der Katholiken und ihre Sozialstellung entspricht in der Art der übrigen Bevölkerung – Katholiken finden sich in allen Berufen und allen Sozialstellungen –, nicht aber in ihrer Zahl. Nur wenige zuverlässige Untersuchungen liegen erst seit kurzem vor. Sehr aufschlußreich sind die von Franz Zopfy für Bayern veröffentlichten Ergebnisse, die er folgendermaßen zusammenfaßt: "Der römisch-katholische Teil der Bevölkerung Bayerns neigt stärker zu sozialen Berufen als zu technischen, Handels- oder freien Berufen. Sein Anteil ist unter den Absolventen der Hoch- und Fachschulen etwas geringer, als seinem Anteil an der gesamten Bevölkerung entsprechen würde. Der Anteil der evangelischen Bevölkerung ist unter den Akademikern höher als unter den Absolventen von Fach- und Berufsfachschulen und hier wiederum höher als unter den Personen ohne eine derartige Ausbildung. Er ist besonders hoch in Berufen mit starker Mobilität über die Landesgrenzen hinweg, wie dies vor allem für die Ingenieurberufe gilt. Die konfessionelle Gliederung der Erwerbspersonen ist u.a. auch abhängig von der Verteilung der Wirtschaftszweige über die konfessionell unterschiedlich geprägten Landesteile. Diesen Feststellungen entsprechend sind die Katholiken in der Landwirtschaft und im Bergbau mit hohen Anteilen vertreten, mit relativ geringen in der mit Schwerpunkt im überwiegend evangelischen Franken ansässigen Elektro- und Metallindustrie, im Handel, in der Rechts- und Wirtschaftsberatung und anderen gehobenen Dienstleistungen." [17]) Und weiterhin schreibt er: "Die Verteilung der katholischen und der evangelischen Bevölkerung entspricht nicht ihrer durchschnittlichen Verteilung auf die Gesamtbevölkerung. Die katholische Bevölkerung ist stärker bei den Arbeitern als bei den Angestellten, in den Laufbahngruppen der Beamten stärker im gehobenen als im höheren Dienst vertreten. Bei den selbstständigen Gewerbetreibenden sinkt ihr Anteil mit wachsender Betriebsgröße." [18]) Da Berufs- und Sozialstellung aber für die Bildungsnähe und Bildungswilligkeit der Eltern von ausschlaggebender Bedeutung ist,[19]) so wären solche Aufschlüsselungen auch für andere Länder von großer Wichtigkeit. Die Annahme, daß die für Bayern von Zopfy nachgewiesenen Trends für das ganze Bundesgebiet gelten, liegt nahe.

Diese Vermutung bestätigt vollauf die erwähnte Untersuchung von Nellessen-Schumacher: Die Katholiken finden sich mit 52% erheblich stärker unter den Selbständigen der landwirtschaftlichen Erwerbs-Bevölkerung als die Nicht-Katholiken, aber die Sozialstruktur der nichtkatholischen Landwirte ist wesentlich günstiger als die der Katholiken. Überproportional finden sich die Katholiken bei den Arbeitern, Ungelernten und mithelfenden Familienangehörigen, unterproportional bei den Beamten und vor allem bei den Angestellten, was beweist, daß sie den mit der Umstrukturierung gegebenen Sozialaufstieg der Arbeiter zu Angestellten weniger stark mitgemacht haben.[20])

Schließlich ist "der Katholizismus" in Deutschland aber auch keine einheitliche bildungspolitische Gruppe. Katholiken gehören allen Parteien mit ihren unterschiedlichen Kulturprogrammen an und haben darüber hinaus ihre örtlich und regional bedingten Vorstellungen von der Lösung schulischer Probleme, die nicht selten den offiziellen kirchlichen Meinungen und Wünschen widersprechen.

Noch einmal sei daran erinnert, daß die Katholiken im folgenden im deutschen staatlich-rechtlichen Sinne genommen werden und die gerade aufgewiesenen Differenzierungen meist außer Acht bleiben. Sie müssen in allen Aussagen trotzdem stets mitverstanden werden. Ihre Ausgliederung ist aber nicht möglich.

2. *Zunehmende Repräsentanz?*

Im folgenden wird der Versuch gemacht, aus den über das bereits 1965 veröffentlichte Material hinausgehenden Zahlen einige Schlüsse auf die Weiterentwicklung der katholischen Repräsentanz in den bundesdeutschen Bildungseinrichtungen zu ziehen. Die neuen, statistisch erfaßten Fakten sind nicht sehr umfangreich. Zudem ist der Zeitraum für aussagekräftige Verlaufsstatistiken zu kurz. Wenn trotzdem Zahlen vorgelegt werden, so darf weder ihre Unvollständigkeit und Begrenztheit beklagt, noch ihr geringer Aussagewert bemängelt werden.

Zunächst sollen lediglich die Fakten dargeboten werden. Dabei greifen wir auch auf solche zurück, die an sich nur lokale oder regionale Bedeutung haben, beschränken uns auch nicht streng auf die Bildungsstatistik.

Das wissenschaftliche Personal der Hochschulen nach der Religionszugehörigkeit. Bereits in seiner früheren Veröffentlichung hat der Verfasser darauf hingewiesen, daß zuverlässige, aussageträchtige Zahlen über den relativen Anteil der Konfessionen am wissenschaftlichen Personal für die Vergangenheit nur unzureichend und unbefriedigend, für die Gegenwart so gut wie gar nicht vorhanden seien und Verlaufsstatistiken für die Zeit nach 1945 ganz fehlten. Er hat daher seine eigenen Aussagen lediglich als leidlich begründete Vermutung verstanden.[21])

Inzwischen hat Walter Nellessen, Präsident des Statistischen Landesamtes von Rheinland-Pfalz, unter Auswertung der Volks- und Berufszählung vom 6.6.1961, sich der Frage detailliert angenommen.[22]) Er kann auf Grund verläßlichen Materials ein sehr viel günstigeres Bild zeigen. Zwar gibt auch er keine Verlaufsstatistik, weil sie nicht erbringbar ist. Aber seine Angaben unterscheiden sich erheblich von früheren Vermutungen. Die Frage, ob die Katholiken in diesem Berufsraum stärker repräsentiert sind als früher, läßt sich also objektiv zwar nicht beantworten, vergleicht man aber die jetzt vorliegenden belegten Angaben mit den früheren Vermutungen, so kann man von einer ganz erheblich höheren Repräsentanz der Katholiken im wissenschaftlichen Personal der Hochschulen sprechen als bisher angenommen wurde.

Nellessens Zahlen seien hier wiedergegeben und erläutert (s. Tabellen I bis III).[23])

Die auf Selbstangabe beruhenden Zahlen der Volks- und Berufszählung von 1961 erlauben es, die 16.001 Personen umfassende Berufsklasse der Hochschullehrer nach Fachrichtung und Konfession aufzugliedern. Entgegen der landläufigen Meinung und trotz klaren Wissens um den Artikel des Grundgesetzes, nach dem niemand gegen seinen Willen über seine Religionszugehörigkeit Auskunft geben muss, waren die Angaben praktisch vollständig. Eine oft vermutete Auskunftsscheu besteht also nicht, mag sie im Alltag aus vielfältigen Gründen auch vorkommen.

Die Befragung der Volkszählung und infolgedessen auch Nellessens Auswertung umfassen "unter dem Zuordnungsbegriff Hochschullehrer in Übereinstimmung mit der Hochschullehrerstatistik das gesamte, an Hochschulen tätige wissenschaftliche Personal – allerdings außer den Emeriti – ... Professoren (ordentliche, außerordentliche, planmäßige, Honorarprofessoren), Dozenten, Lehrbeauftragte, Lektoren, wissenschaftliche Assistenten." [24]) Gewisse Unstimmigkeiten in verschiedenen Statistiken, die nach der gleichen Sache fragen, erklären sich aus dem Unterschied der Zählprinzipien. In der Volks- und Berufszählung werden die gezählten

TABELLE I

Das wissenschaftliche Personal der Hochschulen der Bundesrepublik nach der Religionszugehörigkeit
(*Ergebnisse der Volks- und Berufszählung vom 6.6.1961*)

Fachrichtungen	Insgesamt		davon evangelisch			römisch-katholisch			sonstige		
	absolut	%	absolut	% Fach-richt.	% Reli-gion	absolut	% Fach-richt.	% Reli-gion	absolut	% Fach-richt.	% Reli-gion
	1	2	3	4	5	6	7	8	9	10	11
Bundesrepublik (Konfessionsgliederung: 51,1% ev.; 44,1% rk., 4,8% sonst.)											
Land- und Forstwirtschaft	537	3,4	390	4,0	72,6	110	2,3	20,5	37	2,5	6,9
Künstlerische Fachrichtungen	787	4,9	462	4,7	58,7	230	4,8	29,2	95	6,4	12,1
Gewerbliche Fachrichtungen	48	0,3	29	0,3	60,4	7	0,1	14,6	12	0,8	25,0
Technische Fachrichtungen	2 466	15,4	1 509	15,5	61,2	686	14,4	27,8	271	18,2	11,0
Naturwissenschaften	4 095	25,6	2 630	27,0	64,2	1 053	22,0	25,7	412	27,7	10,1
Theologie und Erziehungswesen	1 312	8,2	692	7,1	52,7	549	11,5	41,8	71	4,8	5,4
Rechtswesen, Volks- und Betriebswirtschaft, Verwaltung	1 607	10,0	979	10,1	60,9	473	9,9	29,4	155	10,4	9,6
Gesundheitswesen	1 813	11,3	1 145	11,8	63,2	535	11,2	29,5	133	8,9	7,3
Geisteswissenschaften	3 293	20,6	1 877	19,3	57,0	1 119	23,4	34,0	297	19,9	9,0
Ohne Angaben	43	0,3	22	0,2	51,2	14	0,3	32,6	7	0,5	16,3
Zusammen (Ist)	16 001	100	9 735	100	60,8	4 776	100	29,8	1 490	100	9,4
gem. Konfessionsgliederung (Soll)	16 001	100	8 176	.	51,1	7 056	.	44,1	768	.	4,8
Saldo	—	—	+1 559	.	+16,0	—2 280	.	—47,7	+722	.	+48,5

Personen nach dem "Wohnortprinzip" erfaßt, d.h. gefragt wird, wer an einem bestimmten Ort wohnt. Bei der Hochschulstatistik wird nach dem "Arbeitsortprinzip" verfahren, d.h. gefragt wird, wer an einem bestimmten Ort (z.B. Hochschule) tätig ist. Die Selbstangabe bei der Volks- und Berufszählung geschah darüber hinaus nach dem Prinzip der Erwerbstätigkeit mit dem Ergebnis, daß viele Honorarprofessoren oder Lehrbeauftragte nicht unter dem wissenschaftlichen Personal erscheinen, sondern unter ihrer Haupterwerbsberufsgruppe (Chefärzte, Verlagsdirektoren, Wirtschaftler usw.). Außerdem zählten zu den Hochschulen auch die Pädagogischen Hochschulen und die sonstigen, nicht im Universitätsrang stehenden Hochschulen, die in den Hochschulstatistiken nicht oder nur getrennt erscheinen. Der Unterschied der beiden Statistiken beträgt 1.403 Personen (Volkszählung 6.6.1961: 16.001; Hochschullehrererhebung 15.11.1960: 17.404). "Mit 7 bis 8% bleibt diese Differenz im Rahmen des Vertretbaren." 25)

Nach Nellessens Feststellung "weist die Volks- und Berufszählung 1961 mit einem Hundertsatz von nahezu 30% für das gesamte wissenschaftliche Personal aller Hochschulen ein wesentlich günstigeres Resultat aus," als bislang für die Katholiken vermutet wurde.26) Allerdings muß hinzugefügt werden, daß nach dem Volkszählungsmaterial das wissenschaftliche Personal nicht weiter differenziert wird, während frühere Untersuchungen ausschließlich nach den Ordinarien gefragt haben. Immerhin ist Nellessens Vermutung, der 30%ige Anteil finde sich einigermaßen gleichmäßig auch auf die verschiedenen Stufen des wissenschaftlichen Personals verteilt vor, nicht unberechtigt.

Katholiken in führenden Positionen. Die Mutmaßungen über den Anteil der Katholiken in öffentlichen Positionen hatten, wie das auch schon beim wissenschaftlichen Personal in Hochschulen gesagt wurde, nur selten ein reales Fundament. Wie sehr sie von der Wirklichkeit abweichen können, wurde ebendort deutlich.

Diese aus dem Volkszählungsmaterial an sich mögliche Auswertung, die Konfession und Sozialstellung und Einkommensteuerklasse in Beziehung setzt, ist nur begrenzt vorgenommen worden. Franz Zopfy gibt für das Bundesgebiet im allgemeinen und Bayern im besonderen aufschlußreiche Zahlen, die wir in modifizierter Zusammenstellung hier anführen.27)

Tabelle II

Das wissenschaftliche Personal der Hochschulen der Bundesrepublik nach Fachrichtungen und Religionszugehörigkeit
(Ergebnisse der Volks- und Berufszählung vom 6.6.1961)

			davon					
		Insgesamt	evangelisch		römisch-katholisch		sonstige	
Fachrichtungen		absolut	absolut	%	absolut	%	absolut	%
		1	2	3	4	5	6	7
Land- und Forstwirtschaft	Ist	537	390	72,6	110	20,5	37	6,9
	Soll	537	274	51,1	237	44,1	26	4,8
	Saldo	–	+116	+29,7	−127	−115,5	+ 11	+29,7
Künstlerische Fachrichtungen	Ist	787	462	58,7	230	29,2	95	12,1
	Soll	787	402	51,1	347	44,1	38	4,8
	Saldo	–	+ 60	+13,0	−117	− 50,9	+ 57	+60,0
Gewerbliche Fachrichtungen	Ist	48	29	60,4	7	14,6	12	25,0
	Soll	48	25	51,1	21	44,1	2	4,8
	Saldo	–	+ 4	+13,8	− 14	−200,0	+ 10	+83,3
Technische Fachrichtungen	Ist	2 466	1 509	61,2	686	27,8	271	11,0
	Soll	2 466	1 260	51,1	1 088	44,1	118	4,8
	Saldo	–	+249	+16,5	−402	− 58,6	+153	+56,5
Naturwissenschaften	Ist	4 095	2 630	64,2	1 053	25,7	412	10,1
	Soll	4 095	2 092	51,1	1 806	44,1	197	4,8
	Saldo	–	+538	+20,5	−753	− 71,5	+215	+52,2
Theologie und Erziehungswesen	Ist	1 312	692	52,7	549	41,8	71	5,4
	Soll	1 312	670	51,1	579	44,1	63	4,8
	Saldo	–	+ 22	+ 3,2	− 30	− 5,5	+ 8	+11,3
Rechtswesen, Volks- und Betriebswirtschaft, Verwaltung	Ist	1 607	979	60,9	473	29,4	155	9,6
	Soll	1 607	821	51,1	709	44,1	77	4,8
	Saldo	–	+158	+16,1	−236	− 49,9	+ 78	+50,3
Gesundheitswesen	Ist	1 813	1 145	63,2	535	29,5	133	7,3
	Soll	1 813	926	51,1	800	44,1	87	4,8
	Saldo	–	+219	+19,1	−265	− 49,5	+ 46	+34,6
Geisteswissenschaften	Ist	3 293	1 877	57,0	1 119	34,0	297	9,0
	Soll	3 293	1 683	51,1	1 452	44,1	158	4,8
	Saldo	–	+194	+10,3	−333	+ 29,8	+139	+46,8

TABELLE III

Das wissenschaftliche Personal der Hochschulen in den Ländern der Bundesrepublik nach der Religionszugehörigkeit (Ergebnisse der Volks- und Berufszählung vom 6.6.1961)

		Insgesamt	davon evangelisch		römisch-katholisch		sonstige	
Länder		absolut 1	absolut 2	% 3	absolut 4	% 5	absolut 6	% 7
Schleswig-Holstein	Ist	625	496	79,4	55	8,8	74	11,8
	Soll	625	551	88,2	35	5,6	39	6,2
	Saldo	—	− 55	−11,1	+ 20	+36,4	+ 35	+47,3
Hamburg	Ist	682	502	73,6	78	11,4	102	15,0
	Soll	682	522	76,6	51	7,4	109	16,0
	Saldo	—	− 20	− 4,0	+ 27	+34,6	− 7	− 6,9
Niedersachsen	Ist	1 909	1 477	77,4	291	15,2	141	7,4
	Soll	1 909	1 468	76,9	359	18,8	82	4,3
	Saldo	—	+ 9	+ 0,6	− 68	−23,4	+ 59	+41,8
Bremen	Ist	96	75	78,1	10	10,4	11	11,5
	Soll	96	81	84,1	9	9,9	6	6,0
	Saldo	—	− 6	− 8,0	+ 1	+10,0	+ 5	+45,5
Nordrhein-Westfalen	Ist	3 032	1 475	48,6	1 258	41,5	299	9,9
	Soll	3 032	1 319	43,5	1 580	52,1	133	4,4
	Saldo	—	+156	+10,6	−322	−25,6	+166	+55,5
Hessen	Ist	1 965	1 278	65,0	521	26,5	166	8,4
	Soll	1 965	1 246	63,4	631	32,1	88	4,5
	Saldo	—	+ 32	+ 2,5	−110	−21,1	+ 78	+47,0
Rheinland-Pfalz	Ist	480	248	51,7	207	43,1	25	5,2
	Soll	480	201	41,9	270	56,2	9	1,9
	Saldo	—	+ 47	+19,0	− 63	−30,4	+ 16	+64,0
Baden-Württemberg	Ist	2 695	1 677	62,2	770	28,6	248	9,2
	Soll	2 695	1 318	48,9	1 261	46,8	116	4,3
	Saldo	—	+359	+21,4	−491	−63,8	+132	+53,2
Bayern	Ist	2 528	1 149	45,5	1 232	48,7	147	5,8
	Soll	2 528	670	26,5	1 802	71,3	56	2,2
	Saldo	—	+479	+41,7	−570	−46,3	+ 91	+61,9
Saarland	Ist	339	152	44,8	149	44,0	38	11,2
	Soll	339	84	24,9	249	73,4	6	1,7
	Saldo	—	+ 68	+44,7	−100	−67,1	+ 32	+84,2
Berlin (West)	Ist	1 650	1 206	73,1	205	12,4	239	14,5
	Soll	1 650	1 206	73,1	188	11,4	256	15,5
	Saldo	—	—	—	+ 17	+ 8,3	− 17	− 7,1

Tabelle IV

Die Arbeitgeber in nichtlandwirtschaftlichen Betrieben nach Betriebsgröße und Konfession in der BRD 1961

Im Betrieb tätige Personen	Konfession der Betriebsinhaber röm.-kath.*) %	Saldo	evangelisch *) %	Saldo	sonst.*) %	Saldo
1–9	44,9	– 0,7	47,4	– 0,6	7,7	1,3
10–49	40,7	– 4,9	50,1	2,1	9,2	2,8
50–99	35,7	– 9,9	53,3	5,3	11,0	4,6
100–499	34,2	–10,4	53,7	5,7	12,1	5,7
500 u. mehr	28,0	–17,6	60,7	12,7	11,3	4,9
*) Erwerbspersonen überhaupt	45,6		48,0		6,4	
Wohnbevölkerung	45,5		50,2		4,3	

Tabelle IV und V weisen sowohl für die Bundesrepublik als auch für Bayern im besonderen aus, daß die Zahl der katholischen Arbeitgeber in nicht-landwirtschaftlichen Betrieben in jedem Fall einen negativen Saldo zeigt. Dieser negative Saldo wächst mit zunehmender Betriebsgröße und erreicht im überwiegend katholischen Bayern einen außerordentlich hohen Anteil. Diese fallende Tendenz des katholischen Anteils mit steigender Betriebsgrößenklasse ist besonders auffällig in den von Zopfy mituntersuchten Großstädten München, Nürnberg und Augsburg. An Hand der Zahlen für diese Städte, die so gut wie keine landwirtschaftlichen Betriebe

Tabelle V

Die Arbeitgeber in nichtlandwirtschaftlichen Betrieben nach Betriebsgröße und Konfession in Bayern 1961

Im Betrieb tätige Personen	Konfession der Betriebsinhaber röm.-kath.**) %	Saldo	evangelisch **) %	Saldo
1–9	68,6	–2,5	27,4	1,0
10–49	63,7	–7,4	31,3	4,9
50–99	55,4	–15,7	38,1	11,7
100–499	51,2	–19,1	41,6	15,2
500 u. mehr	41,7	–29,4	50,3	23,9
**) Erwerbspersonen überhaupt	71,1		26,4	
Wohnbevölkerung	71,2		26,4	

Tabelle VI

Erwerbspersonen in Bayern 1961 nach der sozialen Stellung und der Konfessionszugehörigkeit in ausgewählten Erwerbsgruppen

		Konfession der Erwerbspersonen					
		röm.-kath.		evangl.		sonst.	
		%	Saldo	%	Saldo	%	Saldo
Selbständige in landwirtschaftl. Betr.	Betriebsfläche						
	bis 0,5 ha	73,9	2,8	24,8	−1,6	1,3	−1,2
	0,5– 2 ha	79,3	8,2	19,8	−6,6	0,9	−1,6
	2 –10 ha	80,7	9,6	18,8	−7,6	0,5	−2,0
	10 –30 ha	77,0	5,9	22,7	−3,7	0,3	−2,2
	30 u. mehr ha	84,2	13,1	15,5	−10,1	0,3	−2,2
Insgesamt		79,3	8,2	20,2	−6,2	0,5	−2,0
Beamte							
Einfacher u. mittl. Dienst		72,7	1,6	25,4	−1,0	1,9	−0,6
Gehobener Dienst		71,0	−0,1	27,3	0,9	1,7	−0,8
Höherer Dienst		63,6	−7,7	34,2	7,8	2,2	−0,3
Insgesamt		70,9	−0,2	27,2	0,8	1,9	−0,6
Angestellte		63,2	−7,9	33,0	6,6	3,8	1,3
Arbeiter (ohne Handlanger u. Heimarb.)		71,4	0,3	26,2	−0,2	2,4	−0,1
Handlanger		76,0	4,9	21,0	−4,6	3,0	0,5
Heimarbeiter		62,2	−8,9	36,0	9,6	1,8	−0,7
Arbeiter insgesamt		71,9	0,8	25,6	−0,8	2,5	0,0

haben, zeigt sich am besten, daß der evangelische Bevölkerungsteil eher zu einer Tätigkeit in selbständiger Stellung neigt als der katholische. Die selbständigen Gewerbetreibenden finden sich auch überdurchschnittlich und mit steigender Tendenz bei wachsender Betriebsgröße bei den anderen Religionsgemeinschaften oder den Freidenkern.

Tabelle VI gibt Auskunft über die Konfessionszugehörigkeit einiger ausgewählter Erwerbsgruppen in Bayern. Erwartungsgemäß ist die katholische Bevölkerung stärker als die nichtkatholische unter der Gruppe der Selbständigen in der Landwirtschaft Tätigen zu finden. Hier ist ihr Überhang bedeutend und steigt mit wachsender Betriebsgröße, während der der Nichtkatholiken entsprechend abnimmt. Über die in der Landwirtschaft beschäftigten Unselbständigen gibt Zopfy keine Auskunft. Lediglich bei den Beamten des einfachen und mittleren Dienstes haben die Katholiken einen positiven Saldo; im gehobenen erreichen sie bis auf 0,1 Punkte ihr Soll, dagegen hinken sie im höheren Dienst um fast 8 Punkte nach, ebenso bei den Angestellten, während bei den Arbeitern der Saldo wiederum fast ausgeglichen ist.

TABELLE VII

Die Beamten nach Laufbahngruppen und Konfession in Bayern 1950 und 1961 in %

Laufbahngruppe	Katholisch			Evangelisch			Sonstige		
	1950	1961		1950	1961		1950	1961	
Einf. u. mittl. Dienst	73,6	72,7	−0,9	24,6	25,4	0,8	1,8	1,9	0,1
Geh. Dienst	72,4	71,0	−1,4	26,0	27,3	1,3	1,6	1,7	0,8
Höh. Dienst	69,9	63,6	−6,3	28,3	34,2	0,3	1,8	2,2	0,4
Insgesamt	72,7	71,1	−1,6	25,8	26,4	0,6	1,5	2,5	1,0

Eine interessante Verschiebung des konfessionellen Anteils in den Laufbahngruppen der Beamten in Bayern von 1950 bis 1961 zugunsten des nichtkatholischen Bevölkerungsteiles zeigt Tabelle VII.

Besonders deutlich wird in dieser Tabelle, daß der katholische Anteil nicht nur an der gesamten Beamtenschaft zurückgegangen ist, sondern besonders in einem ganz extremen Maße an den Beamten des höheren Dienstes. Die Zahlen von 1961 haben nicht nur frühere bekannte Tatsachen bestätigt, sondern auch eine eindeutige Entwicklung manifestiert. Daß die Gruppe der Beamten, die keiner der beiden großen christlichen Konfessionen angehört, in allen Laufbahnen zugenommen hat, hängt mit der Umstellung der Konfessionssystematik zusammen. 1961 werden Adventisten, Neuapostolische, Christengemeinschaft, Zeugen Jehovas und ähnliche Gruppen nicht mehr zur evangelischen Bevölkerung gezählt. Nach Zopfy handelt es sich bei den Beamten des einfachen und mittleren Dienstes zu einem großen Teil um Beamte der Bundesbahn und der Bundespost. In München ist eine besonders große Anzahl evangelischer Beamter des höheren Dienstes beschäftigt. Dies hat seinen Grund darin, daß sie einerseits in den Zentralbehörden des Landes, andererseits in denen des Bundes (Bundespatentamt, Bundesfinanzhof, Bundesbahndirektion u.a.) tätig sind. "Die Zahlen für das gesamte Bundesgebiet ergeben ähnliche Relationen. Bei einem Konfessionsverhältnis katholisch: evangelisch unter den Erwerbspersonen überhaupt von 45,6 : 48,0% sind

im einfachen und mittleren Dienst 46,2% der Beamten katholisch, 47,9% evangelisch,
im gehobenen Dienst 43,4% katholisch, 51,0% evangelisch,
im höheren Dienst aber nur 42,3% katholisch, dagegen 52,9% evangelisch."28)

Die wirtschaftliche Gesamtlage der Katholiken Bayerns ist relativ gesehen also bedeutend schlechter als die der Nichtkatholiken. Besonders in den oberen Lohngruppen nimmt der Anteil der Katholiken erheblich ab, der der Evangelischen und besonders der der Sonstigen jedoch stark zu. Die folgende Tabelle, die auf der Auswertung der Lohnsteuerkarten von 1961 beruht, verdeutlicht dies.

TABELLE VIII

Lohngruppe und Konfession

Jahresbrutto-lohngruppe in DM	Von 100 Lohnsteuerpflichtigen in Bayern waren 1961 röm.-kath.	evang.	sonst.
unter 6.000	64,8	25,0	10,2
6.000– 8.400	61,7	22,6	15,7
8.400–12.000	57,7	24,6	17,7
12.000–16.000	52,2	26,6	21,0
16.000–20.000	48,6	29,5	21,9
20.000–25.000	40,4	33,3	26,5
25.000–36.000	33,8	37,0	30,0
36.000–50.000	28,2	39,7	32,1
50.000 u. mehr	25,7	42,3	32,0

Studierende an wissenschaftlichen Hochschulen. Auf die Studierenden an wissenschaftlichen Hochschulen und ihre konfessionelle Verteilung fällt schon immer deswegen besonders der Blick, weil sie in regelmäßigen Hochschulstatistiken erfaßt werden, während das bei keiner anderen Gruppe, auch nicht bei den Schülern der Fall ist. So lassen sich für die Studierenden auch Verlaufsstatistiken aufstellen, die wegen der unmittelbar nach dem Kriege noch mangelnden Unterlagen erst 1952 beginnen können. Es ergibt sich folgendes Bild:

In der prozentualen Berechnung ist die Gesamtzahl aller Studierenden gleich Hundert gesetzt (nicht das Soll der jeweiligen Gruppe); ferner ist der konfessionelle Proporz der Wohnbevölkerung zugrunde gelegt, nicht der der entsprechenden Geburtsjahrgänge. Zu den wissenschaftlichen Hochschulen zählen hier 18 Universitäten, 9 Technische Hochschulen, 4 Wissenschaftliche Hochschulen mit Universitätsrang, 12 Philosophisch-theologische Hochschulen, 5 kirchliche Hochschulen. Für das Wintersemester 1963/64 wurden auch die Studierenden an Pädagogischen Hochschulen und an Einrichtungen für Lehrer an den berufsbildenden Schulen miteinbezogen. Der Proporz wird dadurch allerdings nicht wesentlich verschoben.29)

Die Betrachtung der Zahlen ergibt für die Entwicklung der katholischen Studierenden ein eindeutig negatives Bild. Im Laufe der elf Berichtsjahre ist das Studentendefizit immer größer geworden und hat sich mehr als verdreifacht (von —3,2 auf —11,0). Damit verkleinert sich auch das

TABELLE IX

Entwicklung der Konfessionszugehörigkeit der deutschen Studierenden an wissenschaftlichen Hochschulen WS 1952/53 bis WS 1963/64 im Bundesgebiet (ohne Saarland und Westberlin) in relativen Zahlen *)

Wintersem.	1952/53	1954/55	1955/56	1957/58	1960/61	1963/64
Katholiken						
Ist	42,0	40,9	39,5	37,4	35,1	34,2
Soll	45,2	45,2	45,2	45,2	45,2	45,2
Überhang	−3,2	−4,3	−5,7	−7,8	−10,1	−11,0
Evangelische						
Ist	54,1	54,8	56,5	58,6	60,9	61,1
Soll	51,2	51,2	51,2	51,2	51,2	51,2
Überhang	2,9	3,6	5,3	7,4	9,7	9,9
Sonstige						
Ist	3,9	4,3	4,0	4,0	4,0	4,7
Soll	3,6	3,6	3,6	3,6	3,6	3,6
Überhang	0,3	0,7	0,4	0,4	0,4	1,1

*) Bearbeitet nach den Unterlagen des Statistischen Bundesamtes Wiesbaden von ERLINGHAGEN, K.: "Weiterer alarmierender Rückgang der kath. Studierenden." In: *Stimmen der Zeit*, 1965/66, S. 468.

Reservoir späterer Akademiker und des wissenschaftlichen Nachwuchses relativ erheblich. Auf die Folgen, die sich daraus ergeben, ist an anderer Stelle früher schon hingewiesen worden.30) Da Gymasiasten und Studierende zu einem extrem hohen Anteil aus Akademikerkreisen stammen, während vor allem die Arbeiter- und Bauernbevölkerung weniger Kinder zu höheren Schulen und zur Universität schickt,31) muß die Zahl derjenigen Familien, aus denen katholische Schüler und Studierende vorwiegend kommen könnten, relativ stets geringer werden.

Über den Anteil der weiblichen katholischen Studierenden an der Gesamtzahl der weiblichen Studierenden liegt für zwei Berichtsjahre eine Vergleichsmöglichkeit vor.

Katholische Schüler auf weiterführenden Schulen. Wie schon früher aufgewiesen wurde,32) hat die absolute und relative Zahl der katholischen Schüler an Gymnasien von 1953 bis 1961 erheblich zugenommen, sodaß sich das Bildungsdefizit merklich verringert hat. Ähnliches trifft auch für die Mittelschulen zu. Nellessen gibt für Mai 1961 auf Grund der Statistik der allgemeinbildenden Schulen für die Gymnasien sogar nur noch ein

TABELLE X

Weibliche Studierende an wissenschaftlichen Hochschulen nach der Religionszugehörigkeit im Bundesgebiet [a]

Wintersemester	1960/61	1963/64
Katholiken		
Ist	32,4	32,6
Soll [b]	45,8 [c]	45,2 [d]
Überhang	−13,4	−12,6
Evangelische		
Ist	63,8	63,0
Soll [b]	50,8 [c]	51,2 [d]
Überhang	13,0	11,8
Sonstige		
Ist	3,8	4,4
Soll [b]	3,4 [c]	3,6 [d]
Überhang	0,4	0,8

[a] Bearbeitet nach den Quellen des Stat. Bundesamtes Wiesbaden.

[b] Die Sollangabe enthält zwei Fehlerquellen. Erstens wird der Bevölkerungsproporz zugrunde gelegt, was nicht exakt ist; zweitens wird das Verhältnis männlich : weiblich als 50 : 50 unterstellt.

[c] Mit Saarland, ohne Berlin.

[d] Mit Berlin.

Defizit von —2,1% an katholischen Schülern an.[33] Wenn diese Zahl wegen des anderen Bezugssystems auch ein wenig günstiger erscheint als die vom Verfasser für den gleichen Zeitpunkt errechnete, so ist doch zu bedenken, daß die größere Kinderzahl der Katholiken [34] in beiden Fällen unberücksichtigt geblieben ist, man bei genauer Errechnung also nicht den konfessionellen Bevölkerungsproporz sondern den des jeweiligen Geburtsjahrganges zugrunde legen müßte, wodurch sich für die Katholiken wiederum ein schlechteres Bild ergäbe. Immerhin ist eine deutliche Aufwärtsentwicklung nicht zu übersehen.

Ob sich allerdings "aus den geringen Defiziten an katholischen Schülern ... schon die ersten Erfolge der intensiven Bildungswerbung im katholischen Bevölkerungsteil ablesen (lassen), die zu der Hoffnung berechtigen, daß die Katholiken in nicht allzu ferner Zukunft auch in den akademischen Lehrkörpern entschieden stärker vertreten sein werden," wie Nellessen gar zu optimistisch meint,35) muß vorläufig noch dahin gestellt bleiben. Erstens hat nämlich die "intensive Bildungswerbung im katholischen Bevölkerungsteil" erst erheblich später (etwa ab 1965) mit Erfolg eingesetzt; eine merkliche Steigerung der katholischen Gymnasiasten und damit eine faktische Ausgleichung des katholischen Bildungsdefizits ist also erst in einigen Jahren zu erwarten. Und zweitens kamen bislang relativ viel weniger katholische Gymnasiasten zum Abitur und noch viel weniger zu den Hochschulen. Erst wenn auch diese Defizite ausgeglichen sind, "werden eben mehr Katholiken die wissenschaftlich-fachliche Qualifikation erworben haben und sich um den Eintritt in diese soziale Spitzenberufsgruppe (des wissenschaftlichen Personals Vf.) bewerben." 36)

In einer Untersuchung über "die soziale Herkunft der Gymnasiasten im 10. und 13. Schuljahrgang" 37), geht Hans Kullmer auch auf die Religionszugehörigkeit der untersuchten Gymnasiasten ein. Seine Tabelle führt vor allem zu folgenden Einsichten: bestätigt wird die schon bekannte Tatsache, daß die Katholiken weniger Schüler zur höheren Schule schicken als die Nichtkatholiken. Bestätigt wird weiterhin die bislang nur als – allerdings durch die breite punktuelle und regionale Erfahrung erhärtete – Vermutung vorgetragene These, nach dem 10. Schuljahr ("Mittlere Reife") sei der Schwund an Katholiken besonders stark, sodaß deren Defizit in den oberen Klassen der Gymnasien erheblich anwachse, was dann wiederum Auswirkungen auf die Zahl der Studierenden, der Akademiker und das Reservoir für den wissenschaftlichen Nachwuchs habe. Bestätigt wird sodann die Vermutung, die Nellessen bereits mit einer Zahl

TABELLE XI

Schüler im 10. und 13. Schuljahr nach der Religionszugehörigkeit in der BRD 1965 *)

Religionszugehörigkeit	männlich	weiblich	insgesamt	
	%	%	%	Saldo
			10. Schuljahr	
evang.	52,1	53,7	52,8	3,0
röm.-kath.	44,7	43,2	44,1	−1,7
sonst.	3,2	3,1	3,2	−2,2
			13. Schuljahr	
evang.	54,5	56,9	55,4	5,6
röm.-kath.	40,5	38,8	39,9	−5,9
sonst.	5,2	4,2	4,7	0,3

*) Wohnbevölkerung im Bundesgebiet (ohne Bremen und Hamburg): evang.: 49,8%; kath.: 45,8%; sonst.: 4,4%.

belegt hatte,[38]) daß der Anteil der katholischen Schüler erstaunlich viel höher ist als bislang angenommen wurde. So beträgt zwar das katholische Schülerdefizit im 13. Schuljahr —5,9%, im 10. Schuljahr aber nur —1,7%.[39]) Zum ersten Mal haben wir über den Oberstufenschwund verläßliche Zahlen. Nicht voll zu bestätigen scheint sich dagegen die Behauptung, die katholischen Schüler verließen in großen Scharen bereits wieder die unteren Klassen der Gymnasien.

Wie weit sich in diesen Zahlen die erst seit zwei bis drei Jahren laufende Bildungswerbung, besonders unter der katholischen Bevölkerung, auswirkt, läßt sich nicht mit Sicherheit sagen. Wenn sie wirksam geworden ist, muß sie sich in beträchtlich höheren Schülerzahlen der unteren Klassen der Gymnasien (6 bis 8) zeigen, allenfalls noch beim Übergang von Klasse 10 in die Oberstufe, wofür allerdings bislang noch wenig spricht. Umfängliche Jahrgangs- und Verlaufsstatistiken fehlen.

Die auffällige Zäsur beim Übergang auf die Oberstufe des Gymnasiums ist nach Kullmer zum Teil darauf zurückzuführen, daß offensichtlich evangelische Eltern ihre Töchter relativ häufiger weiterführende Schulen besuchen lassen als katholische." [40]) Gleichzeitig aber warnt er davor, die aufgetretenen Abweichungen wegen der Geringfügigkeit der Differenzen als typische konfessionelle Verhaltensweisen der Eltern zu interpretieren.

Bei der Untersuchung der Frage, ob unter den Kindern des Freistaates Bayern noch aktivierbare Begabungsreserven vorhanden seien, hat Hans Lohbauer auch nach der religiösen Zugehörigkeit jener Schüler und Schülerinnen gefragt, die für den Übertritt zu weiterführenden Schulen geeignet waren, diesen Übertritt aber nicht vollzogen.[41]) Der Gesamtuntersuchung liegt ein Erhebungsbogen zugrunde, der zur Beantwortung an alle Volksschulen geschickt wurde. Frage 2 richtet sich auf die für den Besuch einer höheren Schule geeigneten Schüler, Frage 3 auf diejenigen, die trotz Eignung nicht angemeldet wurden. In 4 und 5 wird die gleiche Frage hinsichtlich der für die Mittelschule Geeigneten gestellt. Dieser Erhebungsbogen wertet die für jeden Schüler über die Eignung zum Besuch einer weiterführenden Schule anzulegenden Schülerbogen aus. Über die in diesem Schülerbogen angewandten Beurteilungskriterien wird keine Auskunft gegeben.

Lohbauers uns hier interessierende Zahlen über den Konfessionsproporz beruhen allerdings nicht auf einer Individualangabe des Bekenntnisses, sondern auf einer Globalerfassung der Schulen (katholische Bekenntnisschulen, evangelische Bekenntnisschulen, Gemeinschaftsschulen). "Mit dieser Gliederung der Schulen ist freilich keine ausschließliche Aufteilung der Schüler nach ihrer konfessionellen Zugehörigkeit gegeben, denn es wird ein nicht unerheblicher Teil der Bekenntnisschulen auch von bekenntnisfremden Kindern besucht. Aber diese Angehörigen eines anderen Bekenntnisses in den Bekenntnisschulen machen doch nur einen kleinen Bruchteil der Schüler der Bekenntnisschulen aus; nach den Ergebnissen der Erhebung vom 1. Oktober 1964 werden die katholischen Bekenntnisschulen in Bayern zu 95,6% von katholischen, die evangelischen Bekenntnisschulen zu 89,1% von evangelischen Schülern besucht. Man kann also wohl ohne größeren Fehler annehmen, daß die Ergebnisse aus der Aufgliederung der Schulen nach ihrem Bekenntnischarakter, wie sie in den Übersichten enthalten sind, näherungsweise auch für die Schüler nach ihrer religiösen Zugehörigkeit gelten." [42]

TABELLE XII

Anteil der für den Übertritt in höhere und Mittelschulen geeigneten Schüler an der Gesamtschülerzahl und der trotz Eignung nicht angemeldeten Schüler an der Zahl der geeigneten nach dem Bekenntnisgepräge der Volksschulen in Bayern 1964

	Übertritt in die Mittelschule			
	6. Klasse		6.–8. Klasse	
	geeignet	nicht angemeldet	geeignet	nicht angemeldet
		Bayern insgesamt		
Kath. Bekenntnisschulen	17,3	32,3	12,7	48,4
Evang. Bekenntnisschulen	16,6	38,6	12,3	51,1
Gemeinschaftsschulen	22,9	18,2	14,5	28,3
		Bayerische Großstädte		
Kath. Bekenntnisschulen	22,9	13,4	14,6	24,8
Evang. Bekenntnisschulen	23,8	16,5	15,9	24,9
Gemeinschaftsschulen	17,1	29,3	12,0	37,9

	Übertritt in die höhere Schule			
	4. Klasse		4.–8. Klasse	
	geeignet	nicht angemeldet	geeignet	nicht angemeldet
		Bayern insgesamt		
Kath. Bekenntnisschulen	15,1	41,2	7,2	49,9
Evang. Bekenntnisschulen	20,6	25,6	8,3	37,6
Gemeinschaftsschulen	25,7	21,2	11,3	29,2
		Bayerische Großstädte		
Kath. Bekenntnisschulen	25,4	20,2	10,2	25,7
Evang. Bekenntnisschulen	36,2	12,1	13,3	15,6
Gemeinschaftsschulen	26,6	16,5	11,2	24,1

Da die absoluten Zahlen in Lohbauers Untersuchung weniger interessieren als die relativen, so seien nur diese in modifizierter Weise hier wiedergegeben (s. Tabelle XII).

Das Ergebnis dieser Untersuchung über die Begabungsreserven bestätigt eindeutig die frühere Feststellung: "Es zeigt sich, daß unter aus den 4. bzw. 4. bis 8. Klassen in Bayern für den Besuch höherer Schulen als geeignet begutachteten Schülern der Anteil der Schüler von katholischen Bekenntnisschulen hinter dem von evangelischen zurückbleibt." 43)

Auffällig ist, daß der relativ größte Anteil der Begabten sich auf den Gemeinschaftsschulen befindet und von dort auch die relativ meisten zu höheren Schulen gehen, sodaß die Begabungsreserve dort am kleinsten ist. Dies erklärt sich vor allem daraus, daß bis zum Stichtag die wenigen Gemeinschaftsschulen in Bayern vor allem in grösseren und großen Städten zu finden waren. Dort ist das Schulwesen besser ausgebaut, und überdies bietet sich für jeden Begabten leicht die Möglichkeit, eine weiterführende Schule zu besuchen.

Bei den Mittelschulen ist das Verhältnis katholisch: evangelisch umgekehrt. Hier ist der Anteil unter den geeigneten katholischen Schülern und den Abgängern zur Mittelschule größer, der der Begabungsreserven also kleiner. Der Trend zur Mittelschule ist bei den Katholiken Bayerns also relativ stärker als zu den höheren Schulen und auch stärker als bei den nichtkatholischen Schülern. Andererseits ist die Beurteilung der katholischen Schüler schlechter als die der nichtkatholischen. "Sie werden im Verhältnis seltener als geeignet zum Besuch höherer Schulen beurteilt, von den als geeignet Beurteilten macht ein geringerer Teil Gebrauch von der ihnen eröffneten Möglichkeit der Erreichung eines höheren Bildungsniveaus." 44)

Auch die Betrachtung der Großstädte und der Landgemeinden gibt interessante Aufschlüsse. Obwohl der Anteil der Begabten und der Übergänger in den Großstädten bei beiden Konfessionen höher ist als auf dem Lande, so bestehen die Unterschiede zwischen den beiden Konfessionen trotzdem. Das Gleiche gilt auch für die Landgemeinden. Auch dort ist die relative Zahl der als geeignet Bezeichneten bei den katholischen Schülern geringer als bei den evangelischen. Und wiederum geringer ist ihr Übergang zu weiterführenden Schulen. Allerdings sind hier die Unterschiede nicht sehr groß.

Erstaunlich groß ist dagegen der in den Gemeinschaftsschulen als zum Übergang auf weiterführende Schulen geeignet befundene Anteil der Schüler und ihr tatsächlicher Übergang. Dort ist die verbleibende Begabungsreserve infolgedessen am geringsten.

"Als Ergebnis der vorliegenden Untersuchung steht fest, die 'Begabungsreserven' sind unter den Katholiken größer als unter den Andersgläubigen; wenn mehr Schüler für den Übertritt in weiterführende Schulen gewonnen werden sollen, muß vor allem der Wille zum Bildungsaufstieg bei den katholischen Eltern geweckt werden." 46)

Die dem Kullmerschen Aufsatz zugrunde liegende Individualbefragung vom 15. Mai 1965 benutzt Heinz Monz, um die Verhältnisse in Rheinland-Pfalz und im Regierungsbezirk Trier getrennt zu untersuchen.45) Aus seinem Material stellen wir Tabelle XIII zusammen.

Die Ergebnisse der Individualbefragung zeigen für die Katholiken ein bedeutend weniger erfreuliches Bild als die positive Entwicklungsreihe, die nach den Unterlagen des Statistischen Landesamtes von Rheinland-Pfalz vom Verfasser früher berechnet werden konnten.47) Damals errechnete er ein Abnehmen des katholischen Defizits von 1950 bis 1963 von —5,5 auf —2,6. Das Defizit für 1965 beträgt für die Gesamtschülerzahl aber —4,1. Da nicht anzunehmen ist, daß der Anteil der katholischen Schüler innerhalb von zwei Jahren auf den Gymnasien von Rheinland-Pfalz so erstaunlich zurückgegangen ist, bleibt die Frage offen, welcher der beiden Statistiken größere Zuverlässigkeit zukommt.

TABELLE XIII

Oberschüler in Rheinland-Pfalz
nach Konfessionszugehörigkeit 15.5.1965

	Insgesamt	Jungen	Mädchen
Katholiken			
Ist	52,1	52,7	51,2
Soll *)	56,2	56,2	56,2
Überhang	−4,1	−3,5	−5,0
Nicht-Katholiken			
Ist	47,9	47,3	48,8
Soll *)	43,8	43,8	43,8
Überhang	4,1	3,5	5,0

*) Beim Soll wird der Bevölkerungsproporz von Rheinland-Pfalz nicht der Jahrgangsproporz zugrunde gelegt. Ferner wird die Verteilung Jungen : Mädchen als 50 : 50 unterstellt.

Bei der Aufgliederung der Schüler nach Geschlecht zeigt sich, wie anderswo auch, daß die Katholiken weniger Mädchen zur höheren Schule schicken als die Nichtkatholiken. Allerdings schickt auch die nichtkatholische Bevölkerung wie die katholische erheblich mehr Jungen als Mädchen zu den Gymnasien. Aufgegliedert auf den 10. und 13. Schuljahrgang läßt sich feststellen, daß sich in der Oberstufe der Gymnasien wiederum mehr nichtkatholische Schüler befinden als ihrem Anteil an der Gesamtschülerzahl entspricht.[48])

3. *Auswertung und Deutung*

Im folgenden soll versucht werden, das erbrachte Zahlenmaterial in seinen Ergebnissen zusammenzufassen, es auszuwerten und in größeren Zusammenhängen kurz zu deuten.

a) Der für die Berechnung der relativen Zahlen auf die Schüler übertragene konfessionelle Bevölkerungsproporz führt nur zu einer annähernden Genauigkeit der Ergebnisse. Proporzzahlen sind für den jeweiligen Geburtsjahrgang getrennt überhaupt nicht, lediglich für Altersgruppen und die nur auf das ganze Bundesgebiet bezogen vorhanden.[49]) Aber selbst wenn es diese Zahlen für jeden Jahrgang gäbe, so müßten sie mit den konfessionellen Proporzzahlen in den einzelnen, nach Schularten gegliederten Geburtsjahrgängen verglichen werden. Die Schulen aber erfassen niemals Geburtsjahrgänge sondern immer nur Schulklassen. Auch wenn es sich dabei um sogenannte "Jahrgangsklassen" handelt, befinden sich zumal in den oberen Klassen tatsächlich immer Schüler, die nicht selten einen Altersunterschied von zwei, drei und mehr Jahren aufweisen (Sitzenbleiber, zu früh oder zu spät Eingeschulte, durch Übergänge in Verzögerung Geratene usw.). Der wünschenswerte Geburtsjahrvergleich ist praktisch also nie zu erreichen. Von dort herrührende Fehler müssen in Kauf genommen werden.

Diese Fehler sind keineswegs ganz gering, denn der Anteil der katholischen Kinder, zumal der Kleinkinder, übersteigt den der nichtkatholischen merklich und erreicht bei den Lebendgeburten der letzten Jahre fast 50%. Die bearbeiteten Zahlen des Statistischen Bundesamtes Wiesbaden ergeben dafür den Beleg.

Die Deutung dieser Tatsache ist nicht ganz einfach. Zu einem Teil wird die höhere Kinderzahl der Katholiken auf eine weltanschaulich bedingte größere Kinderfreudigkeit zurückzuführen sein; zu einem Teil mag sie daran liegen, daß die Katholiken als stärker landwirtschaftliche Bevölkerung [50]) mehr Kinder haben; zu einem Teil mag sie auch darin begründet sein, daß die Katholiken als den Schichten mit geringerem Einkommen zugehörig [51]) sich durch eine größere Kinderzahl auszeichnen. Höheres Einkommen macht im allgemeinen weniger kinderfreudig.[52]) Vermutlich wirken alle diese Ursachen und andere darüber hinaus zusammen.

b) In den Gymnasien hat die Zahl der katholischen Schüler in den letzten Jahren stetig zugenommen. Sie erreicht bei einem negativen Saldo von —1,7% im 10. Schuljahr fast ihr Soll (immer auf dem hier fehler-

TABELLE XIV

Kinder bis zu 18 Jahren nach Altersgruppen und Religionszugehörigkeit in relativen Zahlen (Bundesgebiet ohne Berlin) Stand: 6.6.1961

Alter	kath.	evang.	sonst.
unter 6			
Ist	49,3	47,5	3,2
Soll	45,5	50,2	4,3
Überhang	3,8	−2,7	−1,1
6–14			
Ist	47,9	49,5	2,6
Soll	45,5	50,2	4,3
Überhang	2,4	−0,7	−1,7
14–18			
Ist	46,2	51,2	2,6
Soll	45,5	50,2	4,3
Überhang	0,7	1,0	−1,7

haften Bevölkerungsproporz bezogen). Dagegen bleibt sie mit —5,9 im 13. Schuljahr noch ganz erheblich darunter. Ob sich für das 10. Schuljahr bereits die Bildungswerbung der letzten Jahre auswirkt, muß bezweifelt werden; diese könnte allenfalls in den unteren Klassen spürbar werden. Bis differenziertere Zahlen etwas anderes erweisen, muß angenommen werden, daß unverhältnismäßig viele katholische Schüler die Gymnasien nach der "Mittleren Reife" verlassen.

Über die Entwicklung des Anteils katholischer Schüler in den Mittelschulen liegen keine neueren Angaben vor. Die früher aufgewiesene Zunahme dürfte angehalten haben, wenngleich auch hier das Soll wohl noch kaum erreicht sein kann. Der negative Saldo lag 1961 nämlich noch bei —10,3 hatte, sich aber von —15,9 (1953) über —12,4 (1958) sehr verringert und müßte – sollte die Entwicklung angehalten haben – jetzt bei —5,0 liegen.

c) Die Zahl der katholischen Studierenden an wissenschaftlichen Hochschulen hat in den letzten 12 Jahren absolut zwar zugenommen, relativ gesehen aber beständig abgenommen und bewegt sich bei etwa einem Drittel aller Studierenden. Neueste Zahlenangaben nach 1964 liegen nicht vor.

d) Über den Anteil der Katholiken am wissenschaftlichen Personal der Hochschulen konnten bisher keine differenzierten Zahlen erbracht werden. Jedenfalls scheinen sich frühere Annahmen – so auch die des Verfassers,[53]) wonach er bei den Ordinarien eher unter als über 10% läge, als falsch zu erweisen.

Wenn Nellessens Vermutung zutrifft, daß sich unter dem gesamten wissenschaftlichen Personal der Universitäten und wissenschaftlichen Hochschulen etwa 30% Katholiken befinden, kann von einer fremdverschuldeten Benachteiligung der Katholiken durch Nichtkatholiken, wie sie häufig vermutet und geäußert worden ist, heute keine Rede mehr sein. Der Sollanteil der Katholiken am wissenschaftlichen Personal darf ja nicht am Bevölkerungsproporz gemessen werden sondern am Konfessionsproporz der Studierenden. Dort ergibt sich aber für das Wintersemester 1963/64, daß die Katholiken nur ein gutes Drittel der Studierenden ausmachen. Mithin kämen also – immer vorausgesetzt, daß Nellessens Vermutung zutrifft – relativ ungefähr genauso viele Katholiken wie Nichtkatholiken in den wissenschaftlichen Laufbahnen weiter.

Die entscheidende Engstelle liegt also nicht gar so sehr bei den Studierenden selbst und den sie fördernden oder nicht fördernden Hochschullehrern sondern vorher. Es fehlen die katholischen Schüler auf den Gymnasien, vor allem auf der Oberstufe. Dann scheinen nach bestandenem Abitur weniger Katholiken als Nichtkatholiken ein Studium zu ergreifen, unverhältnismäßig viele also sogleich in einen praktischen Beruf überzugehen oder ein Weiterstudium zu wählen, das nicht als wissenschaftlich gilt und infolgedessen auch nicht in den Statistiken erscheint. Zwar beträgt das katholische Defizit in den 13. Klassen der Gymnasien 1965 etwa —6,0%,[54]) aber das Studentendefizit 1963/64 ist doppelt so groß. Freilich dürfen beide Zahlen nicht kritiklos in Beziehung gesetzt werden. Es ist zwar zu erwarten, daß der katholische Anteil an Abiturienten und Studierenden wachsen wird, ob aber in beiden Fällen in gleichem Maß, bleibt abzuwarten.

In Ermangelung genauerer Statistiken können über die eigentlichen Engpässe für die Kinder des katholischen Bevölkerungsteils nur begründete Vermutungen angestellt werden: Es kommen zu wenige katholische Kinder von der Volksschule zum Gymnasium, (wieviele auf den unteren Klassen wieder abgehen, wissen wir nicht genau); es gehen noch weniger auf die Oberstufe der Gymnasien; es ergreifen noch weniger von den Abiturienten ein Studium; es gelangt aber doch wohl der volle Anteil der qualifizierten katholischen Studierenden in die akademische Laufbahn. Man wird – neben anderen Gründen – auch vermuten dürfen, daß der Durchhaltewille der katholischen Bevölkerung auf dem langen und oft sehr entbehrungsvollen Bildungsweg nicht groß genug ist.

e) Kann von einer wachsenden "Repräsentanz" der Katholiken in den weiterführenden Bildungseinrichtungen gesprochen werden? Die Antwort, die zum Teil jedoch nur auf Vermutungen basiert, muß lauten: ja und nein. In den letzten fünfzehn Jahren gehen immer mehr katholische Kinder in Realschulen und Gymnasien. Ihr "Soll" erreichen sie im Bundesdurchschnitt jedoch noch nicht. In der letzten Klasse des Gymnasiums (vermutlich in der ganzen Oberstufe) ist ihr Defizit sehr groß. (Ob es abnimmt oder wächst, konnte nicht festgestellt werden). Infolgedessen bleibt das Defizit der Studierenden; es wuchs von Jahr zu Jahr und scheint weiterzuwachsen. In den Führungsstellen des öffentlichen Lebens sind die Katholiken unterrepräsentiert. Entwicklungen konnten nicht belegt werden. Beim wissenschaftlichen Personal der Hochschulen im allgemeinen sind die Katholiken offenbar bedeutend besser vertreten, als man bisher vermutete.

f) Die Gründe für das katholische Bildungsdefizit sollen hier nur kurz zusammengefaßt werden, da sie früher bereits ausführlich dargelegt worden sind.[55]) Die historisch-politischen Gründe (Aufhebung des Jesuitenordens 1773, Säkularisation 1803, katholikenfeindliche Politik im 19. und 20. Jahrhundert, Kulturkampf) mögen auf sich beruhen bleiben, da ihre unmittelbare und direkte Auswirkung wohl nicht mehr spürbar ist.

Die inferiore Sozial- und Einkommensstellung, die für gewöhnlich eine größere Kinderzahl mit sich bringt, die dann ihrerseits trotz aller Familien- und Bildungsförderung immer wieder eine Verfestigung in der Sozialinferiorität nach sich zieht, ist für die Katholiken belegt.[56]) Freilich sind die Unterschiede zum nichtkatholischen Bevölkerungsteil nicht allzu gravierend. Die Bildungsbenachteiligung der Kinder aus den unteren Einkommensschichten steht ebenfalls fest.[57])

Für die Relation Familiengröße und Bildungsweg der Kinder liegt jetzt auch eine neuere Studie vor. Sie bestätigt aufs ganze die alte Annahme, daß die Bildungschancen kinderreicher Familien geringer sind als die kinderarmer, macht jedoch in Einzelfragen sehr interessante Differenzierungen, z.B. daß diese Aussage dort nur ganz geringfügig zutrifft, wo sich – wie in der sozialen Oberschicht – mit dem Kinderreichtum ein starker Bildungswille der Eltern paart.[58]) Er ist dann meist zu großen, ja sehr großen Opfern bereit. Die "Sozialsperre" im Bildungsbereich wurzelt also nicht nur in der finanziellen Schlechterstellung, sondern mehr vielleicht noch in der "Bildungsdistanz" und "Bildungsabstinenz" der sozialen Unterschichten.

Ob weltanschauliche Hemmungen für das immer noch vorhandene katholische Bildungsdefizit heute noch wirksam werden, muß doch einigermaßen bezweifelt werden. Die so scharf akzentuierte These Max Webers von der größeren innerweltlichen Wirkkraft des Protestantismus hat im damals behaupteten Sinne nur noch eine sehr abgeschwächte Geltung.[59])

Offenbar wirken aber früher festgelegte, im Religiösen wurzelnde latente Bewußseinsstrukturen bis in die Gegenwart auch bei Glaubensindifferenten nach. Diesem Gedanken wurde bislang viel zu wenig Beachtung geschenkt.

g) Infolgedessen darf auch einem für den Bildungssektor vermuteten, durch das Zweite Vatikanische Konzil und seine Auswirkungen verursachten "geistigen Aufbruch" nicht gar zu große Bedeutung bei gemessen werden. Zwar hat das Konzil vor allem in seinen Äußerungen über die Kirche in der Welt von heute, über den Laien in der Kirche, über die christliche Erziehung,[60]) darüber hinaus aber auch durch seinen Geist und die Art, wie es geführt wurde, dem innerkirchlichen Bewußtsein ganz neue Richtung gegeben. Daß sich diese aber bereits mildernd auf das katholische Bildungsdefizit ausgewirkt hätten, kann vorläufig nicht nachgewiesen werden. Das zu verlangen, wäre auch verfrüht.

Es bleibt abzuwarten, ob das "Menschenbild des Konzils", das Joseph Ratzinger glaubte feststellen zu können,[61]) einen für den deutschen Katholizismus so starken entscheidenden Bildungsimpetus mit sich bringt, daß dadurch andere Hemmungsfaktoren wirksam überwunden werden können. Deklamierter "Aufbruch in die Welt" ist noch nicht realisierter. Das Konzil hat zwar die von Augustin stammende und das kirchliche Denken über das Mittelalter bis heute beeinflussende Auffassung, daß es "für den Christen Bildung sinnvoll nur in Bezug auf das Heil hin geben" könne,[62]) alles andere aber leere Neugier, "*curiositas*," die zu nichts führe, sei stark zurückgedrängt und den von der "Neugier" bewegten Wissensdrang des Menschen an einen glaubwürdigeren Platz gestellt. Aber hat es damit nicht nachträglich lediglich bestätigt, was im Katholizismus der Gegenwart ohnehin schon lebendig war? Dies ist ja auch auf anderen Gebieten geschehen. Der Verfasser kann dem Konzil darin jedenfalls nicht – wie Ratzinger es tut [63]) – eine "große, geschichtsträchtige Entscheidung" attestieren, allenfalls eine längst notwendige Bestätigung tatsächlich vollzogener geschichtlicher Entwicklungen.

Die Anpassung an die Wirklichkeit vollzieht sich auch in der "Erklärung über die christliche Erziehung," deren Inhalt und Text "von den Vätern nicht mit großer Liebe behandelt worden ist." [64]) Gleichwohl scheint die Erklärung doch positiver zu bewerten zu sein, als es gemeinhin geschieht.[65]) Völlig neue Impulse werden auch hier nicht gegeben, die ohnehin vorhandene Weltzuwendung des katholischen Bildungswesens allenfalls verstärkt.

h) Die Maßnahmen, die zu einer wirksamen Behebung des noch vorhandenen katholischen Bildungsdefizits getroffen werden müssen, werden sich von denen, die ähnlichen Sozialgruppen gelten, nicht wesentlich unterscheiden. Die breit angelegte allgemeine Bildungswerbung wird auch dem katholischen Bevölkerungsteil zugute kommen. Kirchliche Aufklärungsarbeit, die übrigens schon früher als die öffentliche begonnen hatte, wird heute nur verstärkend wirken. Sie sollte sich vor allem auf die Engstellen, die katholische Kinder in ihren Bildungsgängen zu passieren haben, konzentrieren: Den vorzeitigen Abgang von den weiterführenden Schulen, den mangelnden Willen, ein Studium zu ergreifen, und den zu geringen Durchhaltewillen im allgemeinen.

ANMERKUNGEN

1) ERLINGHAGEN, K.; *Katholisches Bildungsdefizit.* Freiburg 1965, S. 163 ff.

2) NELLESSEN, W.: "Das wissenschaftliche Personal der Hochschulen nach der Religionszugehörigkeit". In: *Katholik und Universität.* Köln 1967, S. 9–26. Eine detaillierte Hochschullehrererhebung für das gesamte Bundesgebiet wird im Statistischen Bundesamt Wiesbaden bearbeitet und voraussichtlich in Teilergebnissen 1969 und 1970 veröffentlicht werden. Sie basiert auf den Selbstangaben der letzten Volkszählung und gibt auch Auskunft über die Religionszugehörigkeit.

3) ERLINGHAGEN, K.: *Katholisches Bildungsdefizit,* a.a.O., an verschiedenen Stellen.

4) Ders.: *Stimmen der Zeit,* 1964/11, 1965/4, 1965/6, 1965/14, 1966/3. STEINKI, P.: "Die Schulausbildung der Kinder katholischer Familien in der Bundesrepublik". In: *Stimmen der Zeit,* 1965/8.

5) Statistisches Bundesamt Wiesbaden: "Wohnbevölkerung nach der Religionszugehörigkeit". In: *Bevölkerung und Kultur.* Volkszählung vom 6.6.1961. Vorbericht 7, S. 7, Stuttgart 1963. Diese Zahlen weisen selbst dann noch signifikante Unterschiede zu den im Statistischen Jahrbuch für die Bundesrepublik Deutschland 1964 (Stuttgart 1964) S. 91 angegebenen Daten auf, wenn man berücksichtigt, daß nicht der gleiche Stichtag und nicht ganz das gleiche Gebiet (einmal mit, einmal ohne Westberlin) gewählt wurden.

6) "Wohnbevölkerung nach der Religionszugehörigkeit", a.a.O., S. 7.

7) Ebenda, S. 6.

8) *Statistisches Jahrbuch 1964,* Stuttgart 1964, S. 91.

9) GRONER, F. (Hrsg.): *Kirchliches Jahrbuch,* Bd. XXV (1957–1961), Köln 1962, S. 501.

10) Ebenda, S. 503.

11) ERLINGHAGEN, K.: *Katholisches Bildungsdefizit,* a.a.O., S. 49.

12) Diese sich dem Verfasser immer mehr aufdrängende Vermutung außert auch Traute NELLESSEN-SCHUMACHER in einer für den Kulturbeirat beim Zentralkomitee der Deutschen Katholiken bestimmten, nicht veröffentlichten Untersuchung über "Soziale Gliederung und Ausbildungsstand der katholischen Erwerbsbevölkerung der Bundesrepublik". Bad Godesberg 1968, S. 100.

13) "Wohnbevölkerung nach Religionszugehörigkeit", a.a.O., S. 8 u. 10 ff.

14) Ebenda, S. 10 f.

15) Ebenda, S. 17.

16) Ebenda, S. 31.

17) ZOPFY, F.: "Soziale Stellung und Konfessionszugehörigkeit". In: *Bayern in Zahlen,* 1965, 5.

18) Ders.: "Die konfessionelle Gliederung der Bevölkerung Bayerns, untersucht am ausgeübten Beruf, bei Hoch- und Fachschulausbildung, und bei den Zweigen der Wirtschaft". In: *Bayern in Zahlen,* 1965, 6.

19) Vgl. *Economic Aspects of Higher Education.* Paris: OECD 1964.

20) NELLESSEN-SCHUMACHER, T.: a.a.O., S. 95 ff.

21) ERLINGHAGEN, K.: *Katholisches Bildungsdefizit,* a.a.O., S. 163 ff.

22) NELLESSEN, W.: "Das wissenschaftliche Personal ...", a.a.O., S. 9–26. Die bereits erwähnte, von Nellessen schon angekündigte Neubearbeitung des Problems durch das Statistische Bundesamt Wiesbaden bleibt hinsichtlich der andersartigen Methoden, Rücksichten und Ergebnisse noch abzuwarten.

[23] Bei der Berechnung des Saldos setzt Nellessen nicht die Gesamtzahl des wissenschaftlichen Personals, sondern die Sollstärke der jeweiligen Konfessionsgruppe gleich hundert. Daher die von früheren Berechnungen abweichenden Defizite.

[24] NELLESSEN, W.: a.a.O., S. 12. Dort auch Genaueres zu den Methoden.

[25] Ebenda, S. 14.

[26] Ebenda, S. 23.

[27] ZOPFY, F.: "Soziale Stellung ..." und "Die konfessionelle Gliederung ...", a.a.O.

[28] Ebenda.

[29] Vgl. dazu LEHR, B.: "Der Anteil der Katholiken am akademischen Nachwuchs". In: *Frankfurter Hefte*, 1965/4, S. 245–256. Dort werden Zahlen des Statistischen Bundesamtes Wiesbaden ausgewertet. Deren Unterschiede zu denen des Verfassers erklären sich aus den verschiedenen Bezugsgrößen. Ferner: Das "katholische Bildungsdefizit". Eine Umfrage. In: *Civitas*, 1965/4, S. 367–439. Es handelt sich hier um eine Umfrage unter Schweizer katholischen Akademikern, die allerdings weniger Material, hingegen mehr Äußerungen subjektiver Art über das katholische Defizit bringt. Einige, jedoch selten genau belegte und für die Gesamtschweiz auch nicht repräsentative Zahlen finden sich im Text.

[30] ERLINGHAGEN, K.: *Katholisches Bildungsdefizit*, a.a.O., S. 375–386.

[31] DAHRENDORF, R.: "Arbeiterkinder an unseren Universitäten". In: *Die Zeit*, Nr. 25 u. 26, 1964.

[32] ERLINGHAGEN, K.: *Katholisches Bildungsdefizit*, a.a.O., S. 139 ff.

[33] NELLESSEN, W.: a.a.O., S. 22.

[34] ERLINGHAGEN, K.: *Katholisches Bildungsdefizit*, a.a.O., S. 147, Tab. 91.

[35] NELLESSEN, W.: a.a.O., S. 22.

[36] Ebenda.

[37] KULLMER, H.: "Die soziale Herkunft der Gymnasiasten im 10. und 13. Schuljahr. Ergebnisse einer Individualbefragung vom 15. Mai 1965". In: *Wirtschaft und Statistik*, 1967, 10.

[38] NELLESSEN, W.: a.a.O., S. 22. Seine Angabe (katholisches Defizit = —2.1%) bezieht sich auf die Gesamtheit der Oberschüler, nicht auf einen einzelnen Schuljahrgang.

[39] Da Hamburg und Bremen über die Religionszugehörigkeit der Schuler keine Auskunft geben, bezieht sich Kullmer auf das Bundesgebiet ohne diese Stadtstaaten, wobei er – wie üblich – die Ergebnisse der letzten Volkszählung von 1961 fortschreibt: Bundesgebiet ohne Bremen und Hamburg: evangl.: 49,8%; kath.: 45,4%; sonst.: 4,4%. Ferner ist zu bemerken, daß auch Kullmer den konfessionellen Proporz der Wohnbevölkerung, nicht den des jeweiligen Geburtsjahrganges zugrundelegen muß. Der letzte liegt für die Katholiken, vor allem bei den jüngsten Jahrgängen, bedeutend günstiger (fast bei 50%), wodurch sich das Schülerdefizit naturgemäß wieder erhöht.

[40] KULLMER, H.: "Die soziale Herkunft ...", a.a.O.

[41] LOHBAUER, H.: "Begabtenreserven an den Bayerischen Volksschulen". *Zeitschrift des Bayerischen Statistischen Landesamtes*, München 1965, S. 85–106.

[42] Ebenda, S. 103 f.

[43] Ebenda, S. 104.

[44] Ebenda, S. 105.

[45] Ebenda.

[46] MONZ, H.: "Zur bildungssoziologischen Situation im Regierungsbezirk Trier". In: *Kurtrierisches Jahrbuch*, hrsg. von der Stadtbibliothek Trier und der Gesellschaft für nützliche Forschungen. Trier 1966, Jg. 6, S. 110–132.

[47] ERLINGHAGEN, K.: *Katholisches Bildungsdefizit*, a.a.O., S. 94 ff.

[48] MONZ, H.: "Zur bildungssoziologischen Situation ...", a.a.O., S. 125.

[49] Statistisches Bundesamt Wiesbaden: *Bevölkerung und Kultur*. Volkszählung vom 6.6.1961. Vorbericht 7: Wohnbevölkerung und Religionszugehörigkeit. Stuttgart/Mainz 1963, S. 6.

[50] ERLINGHAGEN, K.: *Katholisches Bildungsdefizit*, a.a.O., S. 168. Dort genauere und ausführlichere Zahlen.

[51] Vgl. Tabelle VIII.

[52] BOLTE, K. M.: *Deutsche Gesellschaft im Wandel*. Opladen 1966, S. 151.

[53] ERLINGHAGEN, K.: *Katholisches Bildungsdefizit*, a.a.O., S. 168.

[54] Vgl. Tabelle XI.

[55] ERLINGHAGEN, K.: *Katholisches Bildungsdefizit*, a.a.O., S. 175–210. Ders. in: *Civitas*, a.a.O., S. 367–439. LEHR, B.: "Der Anteil der Katholiken ...", a.a.O., S. 249 ff.

[56] Vgl. Tabelle VIII.

[57] DAHRENDORF, R.: "Arbeiterkinder ...", a.a.O., GRIMM, S.: *Bildungsabstinenz des Arbeiters?* München 1967. WIDMAIER, P. (Hrsg.): *Begabung und Bildungschancen*. OECD-Beiträge, Frankfurt 1967.

[58] JÜRGENS, R. W.: "Familiengröße und Bildungsweg der Kinder. Entwurf eines Beitrages des Familienministeriums für den 1. Familienbericht der Bundesregierung". Vorgel. Ende März 1967. Da der Bericht der Bundesregierung dem Parlament noch nicht erstattet worden ist, konnten seine Zahlen hier nicht veröffentlicht werden.

[59] WEBER, M.: *Die protestantische Ethik und der Geist des Kapitalismus*. Ges. Aufsätze zur Religionssoziologie. 2. Aufl. Tübingen 1920. Vgl. auch TROELTSCH, E.: "Die Bedeutung des Protestantismus für die Entstehung der modernen Welt". In: Beiheft 2 der *Historischen Zeitschrift*, Berlin 1924.

[60] Vgl. dazu: Die als Ergänzung zum *Lexikon für Theologie und Kirche* erscheinenden Bände "Das Zweite Vatikanische Konzil. Konstitutionen, Dekrete und Erklärungen. Lat.-dt. Kommentare". Freiburg 1966 ff. Ebenso: "Das II. Vatikanische Konzil. Vorgeschichte – Verlauf – Ergebnisse". Dargestellt nach Dokumenten und Berichten von Heinrich Reuter. Köln 1966.

[61] RATZINGER, J.: "Das Menschenbild des Konzils in seiner Bedeutung für die Bildung". Vortrag vor der 3. Plenarkonferenz des Kulturbeirates beim Zentralkomitee der Deutschen Katholiken am 23.4.1966 in Bad Honnef. Veröffentlicht in: *Berichte und Dokumentationen*, hrsg. vom Kulturbeirat beim Zentralkomitee der Deutschen Katholiken, Bd. 4, Köln 1967, S. 33–65.

[62] Ebenda, S. 41 f.

[63] Ebenda, S. 42 f.

[64] Ebenda, S. 53 f.

[65] ERLINGHAGEN, K.: "Die Botschaft des Konzils an die christlichen Erzieher". In: *Österreichische Pädagogische Warte*, 1966, Nr. 11, S. 209–216. "Pädagogische Erwägungen nach dem Konzil". N.F. der *Ergänzungshefte zur Vierteljahresschrift für wissenschaftliche Pädagogik*, 1967, Nr. 6. Mit Beiträgen von K. Erlinghagen, H. Bokelmann, E. Feifel, M. Heitger.

ON THE SITUATION OF EDUCATION OF ROMAN CATHOLICS IN THE FEDERAL REPUBLIC OF GERMANY

by KARL ERLINGHAGEN, Regensburg

The problem of educationally disadvantaged groups is one of the most pressing in educational sociology. Catholics everywhere, and particularly in the Fed. Rep. of Germany can be classed with these groups. The author would like by means of this contribution to complement and adjust a detailed study of this question published in 1965. The complementary material supplies further figures, and the adjustments serve to define the problem more accurately and to allow a more differentiated answer to the question concerning the reasons. It is, first of all, difficult to determine whether the "Catholics" in the Federal Republic of Germany can be regarded as a "social group". The key problem is: Do the persons belonging to various denominations in fact manifest distinct group characteristics? Moreover: Do they show these characteristics because they belong to a particular denomination or because – quite independently of that denomination – for whatever historical and social reasons, they just happen to belong to that group? Also this study confirms that the Catholics are still faced with an educational deficit. How-

ever, it seems that their representation in the leading positions in society has increased. Although this may not apply to all groups of professions (e.g. the higher civil servants in Bavaria), it does apply to the academic teaching professions. There has also been a relative increase in the number of Catholic pupils in secondary school which means that an increase in the number of students and university graduates can be expected in the future. In indicating the factors which have contributed to the Catholic educational deficit, an allusion is made, again and again, alongside historical, social and political influences, to hindrances due to the Catholic religion. This opinion, which the author expounded energetically before, is now expressed with more reservation. If there were any clear relation between creed and tendencies in education, in this case the educational deficit, the Catholic educational deficit should decrease where there are increasing numbers of Catholics drifting away from the Church. However, the material available does not appear to give any indication of this.

APERÇUS DE LA SITUATION DE L'EDUCATION DES CATHOLIQUES EN REPUBLIQUE FEDERALE D'ALLEMAGNE

par KARL ERLINGHAGEN, Regensburg

Le problème des groupes défavorisés au point de vue formation est un des problèmes les plus importants de la sociologie pédagogique. Dans le monde entier et principalement en République Fédérale d'Allemagne, les catholiques font partie de ces groupes. L'auteur qui a déjà publié en 1965 une étude détaillée sur ce problème, voudrait la corriger et la complémenter par cet article. Dans ce but, des chiffres complémentaires ont été rassemblés, le problème a été précisé et l'auteur a donné une réponse plus nuancée à la question de savoir quelles étaient les causes de cette situation. En tout premier lieu, il s'agit d'établir si l'on peut comprendre les "catholiques" en République Fédérale d'Allemagne comme "groupe social". Le problème fondamental est le suivant: les adhérents à différentes confessions accusent-ils des traits caractéristiques bien distincts d'un "groupe social"? Et ensuite: les montrent-ils parce qu'ils appartiennent à cette confession ou bien parce que – indépendamment de cette confession – pour n'importe quelle raison historique et sociale ils font partie de ce groupe? Cette étude confirme aussi que les catholiques se trouvent toujours dans un déficit en éducation. Il semble cependant que le nombre de leurs représentants a augmenté aux postes dirigeants de la société. Quoique ceci ne vaille pas encore pour tous les groupements professionnels (p.e. les fonctionnaires supérieurs en Bavière), il est valable pour les professions d'enseignement. Le nombre des élèves secondaires catholiques a aussi relativement augmenté, ce qui laisse prévoir pour l'avenir un accroissement du nombre des étudiants et des universitaires. En énumérant les causes qui ont provoqué ce déficit en éducation et en mentionnant les facteurs historiques, sociaux et politiques, on met une fois de plus l'accent sur les entraves qui proviennent de la conception catholique du monde. L'auteur, ayant aussi formulé auparavant cette opinion d'une manière plus accentuée l'exprime aujourd'hui avec beaucoup plus de réserve. Si la conception catholique du monde et l'intérêt pour l'éducation (et dans ce cas le déficit) étaient étroitement liés, le déficit catholique devrait diminuer avec le nombre de plus en plus grand de catholiques qui s'éloignent de l'Eglise. Cependant, d'après les données recueillies, ceci ne semble pas se confirmer.

COMMUNICATIONS – BERICHTE – COMMUNICATIONS

BERICHT ÜBER DIE ERRICHTUNG EINER ABTEILUNG FÜR VERGLEICHENDE PÄDAGOGIK AM PÄDAGOGISCHEN FORSCHUNGSINSTITUT IN BRATISLAVA, ČSSR

Im September 1968 wurde beim Pädagogischen Forschungsinstitut in Bratislava eine Abteilung für Vergleichende Pädagogik eingerichtet, die künftig zu einer Forschungformation größeren Umfangs entwickelt werden soll. Gegenwärtig ist diese Abteilung die einzige wissenschaftliche Forschungsstelle für Vergleichende Pädagogik in der Slowakei, bzw. in der ČSSR.

Zur Zeit beschäftigt die Abteilung fünf Wissenschaftler und drei administrativtechnische Mitarbeiter. In Anbetracht der Tatsache, daß die äußerst anspruchsvolle Arbeit Wissenschaftler mit hoher Qualifikation erfordert, die zugleich auch mehrere Sprachen beherrschen müssen, wird sich die Abteilung infolge von Personalschwierigkeiten vorerst nur allmählich entwickeln können.

Ihre vordringlichste Aufgabe sieht die Abteilung in der Sammlung und Sichtung aller von der Vergleichenden Pädagogik gebotenen Erkenntnisse. Diese Erkenntnisse sind für unser Land von außerordentlicher Bedeutung. Dies ergibt sich einerseits aus der historischen Entwicklung der ČSSR, andererseits aus ihrer Stellung im Zivilisations- und Humanisierungsprozess der modernen Gesellschaft. Eine wichtige Determinante in diesem Prozeß ist die wissenschaftlich-technische Revolution der Gegenwart, die neue Probleme für die Erziehung und Bildung aufwirft, und somit die Pädagogik als Wissenschaft vor neue Aufgaben stellt. Wir gehen daher von dem Grundsatz aus, daß mit Methoden gearbeitet werden muß, die ein ausreichendes Maß an Information sichern können. Wir meinen, daß gerade die Vergleichende Pädagogik wesentlich zur Lösung dieser Aufgabe beitragen kann. Demzufolge hat sich die Abteilung folgende Hauptaufgaben gestellt:

1. Ausarbeitung einer modernen Methodologie, sowie einer auf Entwicklung, Probleme und Tendenzen ausgerichteten Theorie der Vergleichenden Pädagogik, Bestimmung der Gegenstände und Ziele dieser Disziplin; Untersuchung der Beziehungen zwischen der vergleichenden Pädagogik und der allgemeinen Pädagogik; Definition der Symbole und Methoden der vergleichenden Pädagogik. Dabei soll auf den gegenwärtigen Entwicklungsstand dieser Disziplin sowie auf neue Tendenzen und Richtungen hingewiesen werden. Schließlich soll die Bedeutung der vergleichenden Pädagogik für die Erziehungsarbeit und schulische Praxis aufgewiesen werden.
2. Vergleichende Untersuchung des Schulwesens in zehn Ländern der Welt mit Hinblick auf Struktur, Organisation und Administration, Dienstleistungen, außerschulische Institutionen, Lehrerausbildung usw.

Wir sind uns der Schwierigkeiten bewußt, die wir bei der Lösung dieser Aufgaben zu bewältigen haben werden. Nichtsdestoweniger werden wir alle Anstrengungen machen, um diese Arbeit in diesem und im folgenden Jahr erfolgreich abschließen zu können. Denn es ist unser Hauptziel, alles, was auf dem Gebiet der modernen vergleichenden Pädagogik bisher geleistet wurde, unseren Lehrern, Pädagogen und Studenten zugänglich zu machen. Die Bedeutung dieser Arbeit wird Mitarbeiter besonders aus der jüngeren Generation anziehen, wodurch wir die Möglichkeit erhalten werden, ein Kollektiv von Fachleuten für Vergleichende Pädagogik für die Slowakei, bzw. für die ganze Tschechoslowakei heranzubilden.

ANDREJ MILEC, Bratislava

ESTABLISHMENT OF A MAKARENKO DEPARTEMENT IN MARBURG

In February 1968 a Makarenko Departement was set up in the Comparative Education Research Centre at Philipps University, Marburg (Director Prof. L. Froese).*)

Its main function is to carry out research on the Soviet educator and writer A. S. Makarenko and disseminate his works; it endeavours to establish and maintain contacts with interested institutions and individuals inside and outside Germany. The Departement has already embarked upon building up a documentation division which collects and makes available for research purposes all publications (in all languages) by and about Makarenko as well as relevant background literature. It has also started to concentrate on securing papers (especially unpublished materials such as journals, letters ect.) and questioning persons who had any contact with Makarenko and/or his educational establishments.

In this connection, persons who visited children's homes and similar establishments in the USSR before the second world war and persons in possession of early Makarenko publications, letters written by A. S. Makarenko and correspondence with institutions and persons with whom he was connected (particularly in the Gor'kij Colony near Poltava or Char'kov and the Dzerzinskij Commune in Char'kov) are asked to contact the Departement The annual report "Makarenko 68 – Information from the Makarenko Departement" edited in German, Russian and English, is available free of charge.

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CONFERENCES – KONGRESSE – CONGRÈS

MEETING OF THE COMMITTEE FOR COMPARATIVE EDUCATION OF THE GERMAN EDUCATION SOCIETY

Berlin, 3 and 4 January 1969

The topic of this year's meeting, which took place at the invitation of the *Institut für Bildungsforschung in der Max-Planck-Gesellschaft* (Institute for Educational Research) in Berlin, was chosen with regard to the Congress of the Comparative Education Society in Europe in Prague, and was as follows: "Theory and Practice of Curriculum Development – Comperative Aspects". The lecture by S. B. Robinsohn (Berlin) on "Motives and Principles of Curriculum Reform – A Comparative Survey" provided an introduction to the complex of problems covered by the topic of the meeting. The question concerning the present state of international curriculum research – the comparative analysis dealt with the USA, the USSR, East Germany, Britain and Sweden – was posed at three levels: (1) Motives and initiatives in curriculum research; (2) Main categories and principles of curriculum theories, and (3) Structure and problems of curriculum strategy. The study resulted in a considerably higher degree of agreement concerning motivations than with regard to curriculum theory. A marked imbalance was noted between theory and strategy of curriculum development.

The overall picture which had thus emerged was dealt with in further detail in a series of contributions, some comparative, others studies of individual countries. Doris Elbers (Berlin) undertook a critical comparison of curriculum theory and practice in the USA, Britain and Sweden. Wolfgang Mitter (Lüneburg) lectured on American curriculum projects in Social Studies, and Ingrid Schindler (Saarbrücken) examined the "*Saarbrückener Rahmenvereinbarung*" *) of the Ministers of Education and Culture with regard to their prerequisites on the level of educational theory and their connections with the "*Rahmenplan*" **). Questions concerning educational ideology and curriculum development in the Soviet Union were dealt with in the lectures by Gerold Anrich (Berlin) and Friedrich Kuebart (Bochum).

The discussions centred again and again on the concept of curriculum itself, which Robinsohn attempted to define making reference to the still insufficiently elucidated theoretical prerequisites as "a structured sequence of learning experiences related to anticipated behavioural results." There was also lively discussion on the problem of the affirmative or critical character of curricula with regard to universally recognised social values and on the possibilities of critical objectification of the content of education.

With regard to methodological aspects, attention should be drawn to the contribution by Willi Voelmy (Berlin) on his study of polytechnical education in East Germany by means of content analysis methods, the limitations of which did however become apparent in the course of discussion. Mention should also be made of the comparison drawn by Detlef Glowka (Berlin) of the relationship of teacher training and the curriculum of schools providing general education in the Soviet Union and the Federal Republic of Germany. As a basis for comparison he introduced the closed cycle in cybernetics ("*Regelkreis*").

The second half of the meeting which was devoted to Committee affairs, was focussed on passing the Statutes of the "German Section of the Comparative Education Society in Europe in the Federal Republic of Germany." The Commission thus affiliated itself as a section belonging to the "Comparative Education Society in Europe" similar to the latter's "British Section." Statutes with the same rules were also adopted for the Committee. Both bodies are composed of the same group of persons, on the one hand in the form of an international association, and in a national learned society on the other. The governing body of both associations is identical and is composed for the year 1969 of Prof. Oskar Anweiler, Bochum (Chairman), Prof. Leonhard Froese, Marburg, and Prof. Hermann Röhrs, Heidelberg (elected Chairman from 1970).

FRIEDRICH KUEBART, Bochum

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*) The "*Rahmenvereinbarung zur Ordnung des Unterrichts auf der Oberstufe der Gymnasien*" (Agreement on the Reform of the Upper Secondary School Curricula) was concluded by the Ministers of Education and Culture of the *Länder* of the Federal Republic of Germany in 1960 in Saarbrücken. This agreement provided the basis for secondary school reforms which are still under discussion.

**) The "*Rahmenplan zur Umgestaltung und Vereinheitlichung des allgemeinbildenden öffentlichen Schulwesens*" (Plan for the Reorganisation and Unification of the School System) was drawn up by the *Deutscher Ausschuß für das Erziehungs- und Bildungswesen* (German Committee for Education) and published in 1959. This plan was in fact the beginning of the debate on school reform which has continued ever since.

EDUCATION AT THE FOURTH INTERNATIONAL CONGRESS OF ECONOMIC HISTORY

9–14 September, 1968, at Bloomington

Although within the last decade economists and sociologists have been showing much active interest in the study of education, contributions from economic historians have been surprisingly few and far between. "Surprisingly" in view of the fact that the interest of economists in education has derived very largely from the importance and implications of education for economic growth, a theme which is of no less concern to economic historians. It is, therefore, of interest to note that the latter paid due attention to education at the 4th Congress of the International Economic History Association. This was held from 9–14 September 1968 in the spacious halls of the Memorial Union of the Indiana University at Bloomington, and attracted over 300 scholars from 30 countries.

There were eight thematic sections at the Congress, and more than half of the papers presented to that on "Technology and Economic Growth" were concerned with educational themes. For the host country C. Arnold Anderson and his wife, M. J. Bowman, (a sociologist and an economist respectively, but both of the Comparative Education Center of the University of Chicago) presented a paper on "Human Capital and Economic Modernisation in Historical Perspective." Suggesting lines of research rather than answering questions perceived in a variety of historical societies, they sought to direct attention to the effects of economic growth upon patterns of human learning; the paper considered, *inter alia*, the extent of literacy in early industrialisation and hypotheses concerning its role, and the extent to which diffusion of education – especially institutionalised technical education – takes place for economic rather than non-economic reasons.

E. Robinson and A. E. Musson of Manchester University prepared a paper – which resulted in a lively discussion – based on their forthcoming book on *Science and Technology in the Industrial Revolution*. The thesis they were attempting to establish was that many leaders of the Industrial Revolution, men like Smeaton, Rennie or Nasmyth, were no mere "practical, illiterate men," and they discussed the various educational channels, such as schools, itinerant lecturers, periodicals etc., which contributed to diffusion of scientific and technological knowledge more widely than is generally believed. Also from this country, E. G. West (Kent University) sent in a paper based on his further ingenious researches aiming to demonstrate that the accepted view of state intervention promoting more and better education for all in 19th century England – rather than arresting and destroying its development through private initiative – appears highly debatable.

A more positive view of the part played by the state was taken by A. Klima of Prague in discussing the growth of at first vocational but from 1774 general education, accompanying the rise of textile industry, in Bohemia under the enlightened absolutism of the Habsburgs. The tradition of Comenius was of value here, while industrial (non-vocational) schools and, in 1806, the Prague College of Technology came into existence explicitly to help local manufactories to stand up to English competition. In the case of Japan of the Meiji period, 1868–1912, the state was indeed initially over-ambitious in promoting education, according to K. Taira, but by about 1890 plans for a national system of education were stabilised, and over the whole period the rate of literacy of Japan's labour force rose from 30% to 70%, and this "was a necessary preparation for a new economic breakthrough during the ensuing period (when) a new industrial age dawned on Japan." The economic importance of universal literacy was also implied in the paper by C. Fohlen of the Sorbonne, in which he hoped for more research into, on the one hand, educational attainment of the masses and, on the other hand, technical competenceof entrepreneurs, to throw light on the difficulties which France experienced in the 19th century in reaching the position of Rostovian "take-off." And from across the Rhine, U. Troitzsch of Bochum in the Federal Republic of Germany, contributed an industry-oriented appraisal of the relationship between technical and humanistic education in Germany in the period 1800–1850.

Several scholars also touched in other sections of the Congress upon the triangular relationship – in its historical dimension – between educational provision, quality of manpower, and economic growth, notably R. M. Hartwell of Oxford in considering obstacles to England's industrial revolution; H. Leibenstein of Harvard in his paper on "Population theories, models and the interpretation of economic history"; and R. Hilan of Geneva whose area of research is Syria.

The central question, posed explicitly or implicitly by these papers and discussions that followed them, was that of the sequential relationship of educational expansion to economic growth. Can today's "developing countries" be right – and can their policy be practicable if it is desirable – in embarking on ambitious educational programmes in order to further economic progress, if historical evidence generally shows educational expansion *following* upon economic growth, indeed having to wait for resources and attitudes born of the latter? Or, have we exaggerated, even misinterpreted, historical evidence pointing to such conclusions, and can – indeed, must – educational expansion *precede* any marked increase in the rate of economic progress? This very large question is clearly of considerable interest also to educationists, for whose information this communication is primarily intended.

R. SZRETER, Birmingham

BOOK REVIEWS – BUCHBESPRECHUNGEN ANALYSES BIBLIOGRAPHIQUES

BERKSON, I. B., *Ethics, Politics and Education*. Eugene/USA: University of Oregon 1968. pp. 348. $ 7.50.

This is a ponderous book – in its form of expression as well as in its actual weight. Its coverage, too, is colossal. It touches on problems in ethics, politics, philosophy of science, educational theory, economics, international affairs, history, and jurisprudence. It is meant to be a contribution to educational philosophy, but is not written at all from the point of view of a professional philosopher. Rather it is an essay in what is often called "punditry" or philosophy of life – an expanded essay on "This I Believe," supported by references to recent writings in science, economics, and, political theory, but nevertheless a personal affirmation of convictions and conclusions.

In Part I there is a judicious characterization of scientific thought which is designed to reveal its limitations in providing a basis for morality. The author claims that the source of moral ideas lies in the historical experience of mankind and not in science or in scientific method. This is acceptable enough; for we do not solve moral problems by surveys or experiments and what other source could our moral ideas have save in "the historical experience of mankind"? But Berkson evades the most fundamental problem in ethics which is that of the justification of some ideas in our historical experience and the rejection of others. One may, like him, assent to enduring principles in this heritage which he makes explicit – the ideals of justice and compassion, of reason and law, of equality and freedom, of personal dignity and community loyalty, of the uniqueness of each individual and the unity of mankind. But he gives no hint as to why these ideals should be exalted rather than others. To put ' Ethics" in the title of a book without raising issues such as this is surely to disappoint the reader, to put it mildly.

In his descriptive critique of ethical theories such as Utilitarianism and Existentialism Berkson emphasizes the point, made long ago by F. H. Bradley, that such theories omit the importance of roles and institutions in the moral life. He also stresses the inseparability of morality from membership of communities such as the family, the nation, and the church. He makes an interesting distinction, too, between morality, which is concerned with the control and generalization of wants in a social framework and ethics which is concerned with living in accordance with imaginatively conceived ideals. Distinctions of this sort are important for giving an adequate account of the moral life of modern man. But Berkson does not really either make clear the basis of his distinctions or work out the inter-relationships between these different elements in the moral life.

Part II starts with a critique of liberalism and Marxism. The former is represented as being concerned mainly with attacking the special privileges of the aristocracy and not with achieving a general equality of social condition – not surprisingly, as it was much more concerned with liberty than with equality. Much is also made of the ineffectiveness of liberal panaceas in bringing about social change. Marxism is more sympathetically treated – partly because of the tendency to deflate it in the USA and partly because of its genuine concern for justice and equality. The rest of Part II is devoted to outlining the constitutional basis of democracy and spelling out its implications for civil liberties, racial equality and the welfare state. The place of the nation state in an international context is also discussed with special reference to the immediate task of achieving a *modus vivendi* with Communist nations.

Part III deals with educational philosophy which Berkson views not so much as the application of a metaphysical principle to education but as a consideration of major educational problems in the light of a democratic social philosophy and system of government. This is a very important, though limited, aspect of the philosophy of education and one would expect a rigorous examination of the implementation of principles such as equality, liberty and respect for persons in the life of educational institutions; one would expect, too, an examination of the role of authority in educational institutions and of the distinctive features of schools, colleges, and universities as institutions or communities. In fact Berkson presents nothing of the sort. There is a descriptive exposition of the various American-isms such as progressivism, essentialism, perennialism, reconstructionism, etc., which contains a judicious, if unphilosophical, defence of what was valuable in the progressive movement. There is a discussion of issues such as religion in the schools, and the common curriculum, a very superficial treatment of indoctrination and academic freedom and even more superficial discussion of liberal education which completely lacks any foundation in theory of knowledge.

The book ends with some suggestions about philosophy and teacher training, the main purport of which seems to be that teachers should not study philosophy of education, but the history of educational ideas, together with a study of the contemporary situation in two aspects: (1) the consideration of the major educational conceptions and of the conflict of opinion in American educational thought; (2) a survey of comparative educational systems throughout the world.

Berkson is surely right to emphasize the importance of social philosophy as part of the philosophy of education. Indeed his stress on the social dimension of experience is the most valuable aspect of his book. But he should surely have done some social philosophy in this sphere instead of just talking about it – particularly at a time when many educational institutions in the USA are in a state of ferment and when students, as well as Paul Goodman, appeal to one of Berkson's cherished ideals – that of community. But to emphasize one area of educational philosophy is one thing; to ignore completely other aspects of philosophy of education is quite another. Berkson eschews the one abstract extreme of metaphysics and concentrates on the other more concrete one of social philosophy. But he omits any serious consideration of what lies in the middle – theory of knowledge, philosophy of mind, and ethics. It is difficult to understand how anyone familiar either with what is going on in philosophy generally or with the current application of philosophy to educational problems could write about philosophy of education without taking some account of this middle area. But perhaps Berkson is really a historian of educational ideas rather than a philosopher of education.

RICHARD S. PETERS, London

BUTCHER, H. J. (ed.) with the assistance of PONT, H. B., *Educational Research in Britain*. London: University Press 1968. pp. 408. 63/–.

The main reasons for producing this book, the editor writes, are: the rapid expansion of educational research in Britain, the consequent state of publication, and the resulting difficulty, or even impossibility, for anyone other than the full-time professional, to keep abreast of current knowledge. This book is, therefore, aimed at satisfying then eed for "up-to-date and authoratative surveys to provide guidance about where to find the most important articles". The main readers for whom the book is meant will have some professional connection with education, whether as teachers, student teachers, lecturers, educational psychologists or research workers, as well as interested persons from abroad.

Educational research in this book is interpreted as empirical research, based on experiment, on social and educational surveys and on the clinical study of individuals. While most of the articles concern themselves with research primarily or only in Britain, some articles include a reasonable amount of American research, presumably because of lack of research in Britain, but in this case, why were these areas selected for inclusion in the book. Indeed there is no rationale given as to the selection of areas of research. This reviewer found it odd, for example, that while a chapter is devoted to the rather scanty research on children's moral development, there is no chapter devoted to the surveys for which Britain is famous, e.g. the Plowden national survey, the Robbins' surveys, the Douglas Longitudinal Study and the IEA national mathematics achievement survey.

Although the book is probably not detailed enough in any one area for research workers in that area, it is certainly an interesting overview for teachers and school administrators. Presumably, there will be a sequel to the book in two or three years' time dealing not only with new developments in the fields already dealt with, but also covering those fields not included in the present book.

The book begins with a survey on the growth and present work of the National Foundation for Educational Research in England and Wales by its ex-Director. W. D. Wall's presentation of the present projects is enticing in that he gives only enough information to whet the appetite. The researches are obviously important, large-scale and well-designed, and one wonders why the editor did not decide to have these given in much more detail. The story of the rapid expansion of the NFER's staff, together with the accompanying problems, particularly that of the procuration of good quality staff makes fascinating reading. The strong (and, it would seem, necessary) plea for the independence of evaluation research workers and their organisation is excellently made. The NFER has a large central staff structure. In contrast, D. A. Walker, the Director of the Scottish Council for Research in Education, describes the small central staff structure of the Scottish Council and its work. One is ever amazed by the large output of good quality work produced by the Scottish Council and one wonders how long this can continue. The burden on Walker must be excessive.

M. Chazan of Swansea gives an adequate and factual account of British research on "Children's Emotional Development". E. A. Lunzer of Manchester, on the other hand, attempts to write an all-embracing article on "Children's Thinking". D. Graham of Durham writes a wellbalanced account of British research (and, in many instances, the lack of it) on "Children's Moral Development".

J. F. Reid of Edinburgh writes on "Reading" and, although he devotes a good deal of space to some of Downing's research, there was no mention of Brimer's (Bristol University) excellently designed study on "An Experimental Evaluation of Coded Scripts in Initial Reading" published in *New Research in Education* in June 1967, where he compares i.t.a. and the diacritical marks system and the colour signals system. On page 135, Reid, speaking of the Watts-Vernon Reading Comprehension Test and Peaker's survey of Progress in Reading, points out that 10 per cent of 11 year olds have a score of 7 or less. He then continues "but as the early questions are said by Peaker to be so simple that almost any pupil could answer them if they were put to him orally, the conclusion is that these 10 per cent constitute a continuing core of almost illiterate children leaving the primary school". This conclusion does not appear to follow.

A. E. G. Pilliner of Edinburgh writes on "Examinations" in a general way but, for some reason, avoids mentioning some of the new types of tests being developed, the Certificate of Secondary Education monitoring and calibration scheme, the advent of the Rasch scaling technique and the NFER item bank project. This last point, however, is taken up in J. Williams' (of the NFER) article on "The Curriculum: Some Patterns of Development and Designs for Evaluation" where he suggests that the item bank could be used for curriculum evaluation, although its present purpose is for helping in the assessment of pupils' school achievement. Williams makes a very clear statement of the problems both in summative and formative research and reports some of the NFER's projects exemplifying their relationship to curriculum evaluation.

S. Wiseman, now the Director of the NFER, writes on "Educational Deprivation and Disadvantage", and takes the opportunity of clearly stating his position on the concept of intelligence in the discussion of backwardness and environmental deprivation. This is a good article and the summary of conclusions that can be drawn from research which he gives on pp. 227–8 is very sound.

D. F. Swift of Oxford provides an article on "Social Class and Educational Adaptation" and includes an interesting account of the changing conceptualisation of "social class" in educational and sociological research.

The article by R. R. Dale of Swansea on "Co-education" is an interesting and well-written account.

Some articles such as "Comprehensive Education", "The Sixth Form and Teachers", "Teaching and Teacher Education" suffered from a lack of hard research to report.

The article by the editor of this book, H. J. Butcher of Edinburgh, on "University Education" is an adequate and well-presented account, but this reviewer would have preferred a more detailed description of the project sponsored by the Committee of Vice-Chancellors and Principals since this looks as though it might be a large-scale and comprehensive project.

The bibliography is excellent. As a first survey of the field, the book is good and will undoubtedly be of use to many persons involved in education. Let us hope there will soon be a second book in the series.

NEVILLE POSTLETHWAITE, Hamburg

CCC, *Reform and Expansion of Higher Education in Europe. National Reports 1962–1967*. Strasbourg: Council of Europe 1967. pp. 264.

The universities of Europe were once one supra-national community speaking the same language, following the same curriculum, open to teachers and students from any nation, issuing a licence to teach which had currency from Scotland to Spain. This cohesion was destroyed by the wedges driven between nations by language, politics, and religion. But a common aim still unites the universities of Europe, and over the last seven years the Council of Europe, through its Council for Cultural Co-operation (CCC) has done much to promote understanding between the educational systems of its twenty member countries.

This book brings together reports on reform and expansion of higher education submitted to the Committee for Higher Education and Research of the CCC, from fourteen countries, up to 1967. All these countries face two major problems: an urgent need to adapt the purpose and content of higher education to a world which is changing so rapidly that all education is threatened by obsolescence, and an urgent need to expand opportunities for higher education to meet the expectations of both the rising generation and those who will employ them.

Each country has to solve these problems in its own way, but hitherto each country has taken little notice of what could be learnt from other countries. This is because those who are involved in the reform of higher education are far too busy to read the detailed reports prepared for countries other than their own. What rector in France or Norway, for instance, has time to consume the seven volumes of the Robbins Report on British higher education, or the detailed monographs of the *Wissenschaftsrat* in Western Germany? What he needs is a brief account of the proposals for reform to set beside his own first hand knowledge.

Hence the reports assembled in this book are timely and welcome. Circumstances in higher education are changing so fast that some of the reports have been overtaken by events, notably by the epidemic of student unrest which spread over Europe in 1968. But this does not diminish their value. To have, in brief compass, a record of how European universities are tackling such problems as the financing of students, the establishment of new institutions of higher education, the reorganisation of university government, the promotion of scientific research, is very valuable. Inevitably, since they were prepared by different writers, and not to any common plan, the reports are uneven in scope. The most comprehensive of them are those from Austria, Western Germany, and the Netherlands. These include some illuminating tables. Some figures from the Netherlands, for example, illustrate the sheer size of the problem which faces one of the smaller nations in the Council of Europe. In 1937 there were some 12,000 students in 10 institutions. It is estimated that by 1970 the University of Utrecht alone will have 12,000 students and the total student numbers in the Netherlands will be about 82,000.

One of the lessons which universities are learning, sometimes with bitterness, is the simple biological lesson that size is dangerous. A unicellular organism divides into two before it reaches a critical size. Some countries (Britain is one of them) have multiplied the number of their universities; others (like France) have permitted their universities to become very large. There are arguments in favour of, and against, both policies. A large university can afford sophisticated equipment, a rich library, generous student amenities. A small university can preserve a close personal relationship between teachers and students. Neither policy can avoid the need to draw on public funds to such a degree that politics are liable to intrude into the affairs of higher education. It is most instructive to have, in the compass of 264 pages, a summary of the way fourteen nations are dealing with these problems.

ERIC ASHBY, Cambridge

DOUGLAS, J. W. B., ROSS, J. M., and SIMPSON, H. R., *All Our Future. A Longitudinal Study of Secondary Education.* London: P. Davies 1968. pp. 241. 42/—.

This is the third book to emerge from the National Survey of Health and Development started in 1946. This is a longitudinal study of over 5,000 children born in the first week of March 1946. The first book was *Children under Five* concerned with the child welfare services, health and home conditions. The second *The Home and the School* concerned primary education. The present volume describes the progress of the children from the time they entered their secondary schools until they were sixteen and a half years old. Further studies in the series will deal with their later careers up to at least the age of 25. This is the only study in England so far which has followed a group through from birth to adulthood. It has produced a mass of detailed information. The earlier volume on the primary school years afforded convincing evidence for the belief that children from economically or culturally deprived homes suffered "a cumulative series of educational handicaps." It showed how the practices of the schools, such as streaming, often reinforced rather than mitigated the disadvantages of these children. It had an important, though imponderable, influence in stimulating widespread criticism and occasional abandonment of these practices. It underlined most effectively the fact that the problem of the deprived child cannot be solved in the schools alone.

The present volume shows that by and large the same is true of the secondary schools, only more so. The first two chapters link the book to the previous studies in the series and describe the kinds of tests which were given and the conditions under which they were administered. The first of the two main sections of the book describes the influence of secondary selection on educational opportunity and attainment. Separate chapters are devoted to selective schools, secondary modern schools, independent schools and comprehensive schools. The last two chapters of the section consider co-education and regional differences in educational opportunity and attainment. The second main section is concerned with parents and children and among the topics discussed are ill or disabled parents; aspirations, interests and attitudes to work; emotional adjustment and school progress; birth order and spacing; and adolescence. A short section of special studies follows. The factors here analysed include right- and left-handedness, short sight, absence from school and prolonged illness. There is a summing up and five statistical appendices. These latter give only a part of the data collected. The full tables are deposited in several university and national libraries.

The general conclusions which emerge from this study are seldom surprising. "The social class differences in educational opportunity which were considerable at the primary school stage have increased at the secondary and extend now even to pupils of higher ability. Thus nearly half the lower manual working class pupils of higher ability have left school before they are sixteen and a half." They are least handicapped when they are in the best equipped and best staffed schools. Or again, "Parental interest is a major factor in school success, but generally the schools are failing to involve the parents in the process of their children's education." All this was known. The value of this study is that it provides up-to-date and utterly convincing evidence for these statements. The tone is matter of fact but it is far more effective than unsupported polemics. It is clear that a single reform such as the abolition of selection and the creation of comprehensive secondary schools, though it might help, will not solve the problem. This book is to be welcomed as showing once again both the complexity and the urgency of the problem.

Richard Goodings, Durham

Fraser, Stewart E., and Brickman, William W., *A History of International and Comparative Education: Nineteenth-Century Documents.* Glenview/USA: Scott, Foresman 1968. pp. 495. $ 10.95.

The international and comparative education aspects of this useful work consist of 32 selections by mainly American observers who have written on 19th century European education and 30 selections by mainly European authors who have written on 19th century American education. The selections are prefaced by short biographical sketches of the authors and an explanation of the circumstances under which each selection was written. This compilation provides easy access to important chapters in over 60 works which students and other users would ordinarily have difficulty finding in any but the largest university libraries. Just as useful, if not more so, is the excellent content of the historical introductory chapter, the expository chapters on European and American education during the 19th century, and the extensive bibliography.

The book lacks an index but other than this fault the work is probably the best collection of its kind assembled to date. The authors are well-known scholars in their field and are inveterate documents collectors. Their compilation provides a comprehensive view of mutual influences, borrowings, differences, and similarities between European and American education as expressed by intelligent international observers of the last century. The period covered is an important one for study, since the concept of free education under state auspices for all youths came about as a result of and was financed largely from the triumph of 19th century industrialization. How to raise new generations in order to sustain national industrial economies and to provide citizenship training appropriate to such states became the major education problem of the age. Universal education was then a new concept in the Western world and each country experimented with school organization, courses of study, and examination patterns. Perceptive international travelers who described in books their observations of other cultures invariably paid attention to innovations in foreign school systems. The best and most insightful of the observations are recorded in this volume.

Interestingly, the volume is dedicated to Isaac L. Kandel, the late and respected comparative education writer who preceded author William W. Brickman as editor of *School & Society*, and to Clifton L. Hall, recently retired Professor of the History of Education at George Peabody College for Teachers in Tennessee where he was the colleague of co-author Stewart E. Fraser. This scholarly dedication is also reflected in the quality of the selections and the meticulous coverage in the expository chapters. This book is highly recommended for class use, for reference purposes, and for the concerned reader interested in what European and American observers thought about each other's educational systems during their early modern formative period.

FRANKLIN PARKER, Morgantown, USA

FREEMAN, JAMES, BUTCHER, H. J., and CHRISTIE, T., "Creativity: A Selective Review of Research." *Research into Higher Education Monographs*. London: Society for Research into Higher Education 1968. pp. 113. 21/—.

The authors of this monograph attempt to survey, classify, and evaluate creativity research having relevance to higher education. Although some of the studies cited are about children, the focus is on higher education. In addition, the volume contains as an example a fairly detailed account of an original study of the creative abilities of architecture students.

The authors deal with creativity research quite broadly and bring together a great diversity of studies. In fact, they point out that one of the major contributions of creativity research to general and educational psychology is that it has brought closer together kinds of studies that have traditionally been separated. Thus, they attempt to present a comprehensive picture of the diversity of subject matter, methods of investigation, and theoretical approaches that characterize creativity research. Separate chapters deal with some of the relationships of creativity to intelligence and personality and with the special abilities associated with creativity, with particular attention to Guilford's Structure of Intellect.

The fourth chapter reports an original study of special abilities in the creativity of architecture students. Measures of the special abilities were derived from performances of the Abstract-Concrete Performance Test of J. G. M'Comisky of Hull University. The test seemed to be particularly effective in predicting performance in Architectural Design.

The two final chapters deal with the possible influences on creativity of such educational factors as institutional atmosphere, stages of creative activity, psychological "set," intolerance of ambiguity, and deferred judgment and such environmental factors as family background, pressures for conformity, and school influences. The final 41 pages of the monograph contains lists of selected references arranged according to a schema devised by the authors.

Within the limits of a 113–page monograph, the authors present a fairly satisfactory picture of the status of creativity research, at least as it stood in mid-1966. The selectivity of the authors makes it appear that certain areas of creativity research are less well developed than they actually are. Most of the studies cited were done in the United States and Britain. Canada, Brazil, France, and Scandanavia are represented but poorly so. Perhaps the most serious omissions are studies done in Japan and India where there has been considerable creativity research. The evaluations of the authors appear reasonably objective, in spite of a tendency to accept uncritically reported results without examining the methods of the investigators. The authors are especially prone to accept uncritically criticisms of some of the major studies and results of studies "claiming to disagree" with these studies. Quite commonly the so-called debunking studies have employed one or two test tasks instead of comprehensive batteries, have reduced time limits severely or extended them indefinitely, have employed different scoring schemes, have used only measures of fluency rather than originality and elaboration, and/or have changed the motivating instructions significantly.

The monograph will be especially useful as a guide to new investigators in the field of creativity research. By pulling together a great diversity of studies, the authors have produced a few new and intriguing syntheses and have suggested some potentially useful directions for future research. Hopefully, it will call to the attention of students of higher education this body of research and will stimulate research and applications in higher education.

E. PAUL TORRANCE, Athens, USA

VESTLUND, GÖSTA (ed.), *Folkhögskolan i Norden. The Nordic Folk High School Yearbook 1966*. Stockholm: Det Nordiske Folkehøjskoleraad 1967. pp. 114.

GÖTHBERG, BO (ed.), *Folkehøjskolen i Norden. The Nordic Folk High School Yearbook 1967–68*. Kungälv: Det Nordiske Folkehøjskoleraad 1968. pp. 178.

The sixth volume of the *Nordic Folk High School Yearbook* departs from the pattern set by previous volumes in that it brings accounts of residential adult education institutions outside Scandinavia, which are deemed to be inspired or influenced by the folk high school idea and practice. Since this practice differs widely between Denmark, Norway, Sweden and Finland, any causal relationships between "the folk high school" and institutions abroad have to be carefully examined. There is a general tendency to give the folk high schools too much credit for inspiring residential adult education elsewhere; the 1966 volume of the *Yearbook* is a good example of this tendency.

The slender volume presents a series of articles by various authors on the development and present status of residential adult education institutions in India, the United States, Great Britain, Poland, Germany, France, Austria, the Netherlands and Israel. Each author tries to link the native institutions with the original folk high schools, with more or less success. It is interesting to note for example that the well known Highlander Folk School in the United States is presented as an example of folk high school influence in the United States, but the story of the unsuccessful direct transplants of the Danish folk high school to Nebraska, Iowa and Minnesota around the turn of the century is not mentioned and causes of the failure are not analyzed. On the other hand, while questionable links of residential institutions in France, Austria and Israel to the folk high schools are claimed by the authors, the very interesting folk high school experiment at Tsito in Ghana, which is conducted with direct Scandinavian involvement, is not mentioned at all.

On the whole the 1966 *Yearbook* brings interesting accounts of residential adult education institutions in many countries, and some of the articles, notably those on the Vydyapeeth centres in Mysore State in India and the successful folk high school influence in Poland, would deserve translation to reach a wider circle of adult educators. It is a pity that the English summary has been cut down to only seven pages.

The seventh volume of the *Nordic Folk High School Yearbook* features as its centre theme the Nordic Folk Academy at Kungälv near Gothenburg, Sweden, which became operational in the spring of 1968 and was officially opened in June of the same year. The concept of a Nordic Academy can be traced to N.F.S. Grundtvig, the father of the Danish folk high school idea. Unlike the folk high school idea, his concept of a Nordic Scientific Academy at Gothenburg did not materialize. Despite some efforts to revive the concept between the two world wars, it was not until the 1960's that the Nordic Academy came under serious discussion by the Nordic Folk High School Council and was eventually established with financial support from the Ministries of Education of Denmark, Finland, Norway and Sweden. In its modern realization the residential academy is an excellent example of international co-operation in an educational venture.

Articles in the 1967–68 *Yearbook* bring alive the history of the Nordic Folk

Academy concept since Grundtvig's first proposal in 1840 as well as describe its realization, present state and future plans. The courses and conferences held at the academy during its short existence indicate that the Nordic Folk Academy is likely to become an important institution for training as well as for continuing education of adult educators in Northern Europe.

An array of interesting articles, ranging from "Glimpses of Adult Education in Developing Countries" to "Our Working-time and our Leisure-time," and the usual brief Finnish and English summaries of the articles round out the *Yearbook*.

The two latest volumes of the *Nordic Folk High School Yearbook* are well worth reading and should join the preceding five volumes of the *Yearbook* in the library of any adult educator interested in residential adult education.

JINDRA KULICH, Vancouver

HAVIGHURST, ROBERT J., *Comparative Perspectives on Education.* Boston: Little, Brown 1968. pp. 285.

This book consists mainly of readings "selected to illustrate the proposition that the educational system of a society is shaped and directed by one or more of the four basic social institutions: family, church, state, and economy." Thus the broad structure is to be presented, rather than details. R. J. Havighurst himself wrote three of the chapters, and provided an introduction to the others. This introduction in some cases offers explanations or analysis, and in others gives a brief up-dating. (Some of the selections are at least 18 years old).

The five sections deal with the following themes: education in a pre-literate society (Hopi Indians); education and society in modern commercial-industrial societies (France, USSR, Japan, Brazil); education in transitional societies (China, Ghana, and Tudor England); education in societies with a dominant theme (South Africa, New Zealand); and education in a society where religion is of fundamental importance (Sudan, Netherlands).

As separate essays or extracts from books, the selected passages have great merit. Otherwise the editor would not have chosen them. Furthermore, some of them deal with topics or regions (like Brazil or New Zealand) on which less than usual information comes to the student of Comparative Education; therefore, such information is welcome. On the other hand, writing about France or the USSR or Japan or the religious question is now so abundant and penetrating that the reader is entitled to wonder what new analyses and methods the editor wishes to point to, or what new global concept of comparative study he represents.

Without criticising the individual essays, or even the interest of the themes represented in the various sections containing them, one must try to evaluate the whole book in terms of concepts, institutional study, and operational analysis. On most of these scores it falls short as a modern aid to comparative study, which in recent years has rushed so far forward.

First, it is not true that "all modern societies have a set of four basic *social* institutions: family, church, state, and economy." It all depends what you mean by "church," of course; but what of China and Japan? They do not and did not possess churches in any acceptable Western sense distinguishable from "society" or family – a point often made by Muslim scholars about Islam too. What of the state in this hierarchy? Political theorists carefully distinguish the defined legalities and coercive powers of states from the looser functions of "society" and constituent "associations." In any case, what seems to matter most in comparative studies of society and education is the aggregated "language of life" within a culture, or the topical idiom of crisis. In the studies here collected, one searches in vain for any consistent application of such conceptual criteria over the broad fields covered, any firmly identified and comparable (or contrastable) institutions, or any systematically studied operations.

The excellent, though old, essays on the Netherlands' religious features were intended to talk of restricted aspects – finance and control of schools. They rightly omit problems of ideology, divisiveness, or the relationship of parochialism to the future of Holland as Europe's port and warehouse; but in a *book* dealing with basic institutions in cultural aggregates, or with individualised cross-cultural problem-study, some clarification of kinship and perspectives can be expected.

The reader of this book has obviously to go further; but what does he know he has learned after reading it, and in which direction is he to move? To fuller area studies? To problem analysis? To the comparative study of institutions or operations? Towards policy decisions and educational reform? To study the relationship between technology, society, education, and development? On all these things there has been a spate of comparative books – including, among the best, the very books from which some of Professor Havighurst's selections were taken. It is a pity that the selective process or the editorial marshalling did not make the outcome for the learner clear.

There is another point about quoting selections. Outstandingly good material by Fraser and de Witt, for example, on France and the USSR, derived double value from being pointed to particular interests or publics at the time of original publication. Here it seems emasculated, or past its best because of age. The editorial supplements do not bring the information and relevance up to date. It would be difficult to achieve this except in a specially written book, such as a year book or monograph, or a well restricted area study dealing with a particular developmental problem.

These criticisms do not impugn the individual value of rather miscellaneous essays. Those on Japan rely too heavily on official sources; but they are good nevertheless. Professor Havighurst's own essay on Brazil is particularly good both in coverage and in analysis.

EDMUND KING, London

HEALEY, F. G., *Foreign Language Teaching in the Universities.* Manchester: University Press 1967. pp. 271. 35/—.

This book is the result of an opportunity afforded to Professor Healey by his university (Manchester) to be released from some of his regular duties over a two-year period to "look at the whole field of foreign language teaching in British universities from a position of greater disengagement." It is an extended discussion of various aspects of this field, based on his own experiences, visits to other institutions, and conversations with colleagues. At various points Professor Healey voices the hope that a more systematic kind of research utilizing questionnaires and tests might some day be undertaken to amplify or modify his conclusions.

The first two chapters, "The present state of the art," and "Current practice," are chiefly descriptive, sketching the aims, methods, and conditions of foreign language teaching in British universities, primarily the "redbrick" universities where the bulk of foreign language teachers for the lower schools are trained. It is immediately apparent to a reader from the United States that foreign language teaching in Britain is in a different world, a world in which classical models of language teaching through translation and prose composition still hold sway. In fact, one gets the impression that British university foreign language teachers even eschew the conventional introductory textbook with its grammatical discussions, vocabulary lists, and reading and translation exercises, for Professor Healey says nothing about the apparatus of teaching. It would appear that the bulk of time in introductory courses is occupied with the "prose composition" exercise, that is, the translation of literary English prose passages into the foreign language. Professor Healey feels that, despite certain advantages of this method it tends to be deadly dreary – a method of "learning by mistakes." Later the student is permitted to try his hand at *free* composition in the foreign language. There is little attention to translation *from* the foreign language, strangely enough, because it is regarded, probably wrongly, as offering too little challenge, and in any case leads to all sorts of arguments in the classroom about proper English style. At the same time it has been traditional to utilize native speakers for conducting classes in conversation, and also to require that the student (unless he is in a service course for non-specialists) spend a certain amount of time abroad in a country where he will have to use the language daily.

The latter portion of the book is devoted to bringing recent changes in language teaching methods to the attention of language teachers, and to suggesting research studies on the evaluation of such methods. Professor Healey believes that at all levels of teaching there should be greater stress on the spoken language; at the same time he recognizes that attainment of the reading objective is appropriate for many students who are going to need foreign language competence in scholarly and scientific activities. He mentions with great approval (rightly, in my opinion) the concept of the Language Centre that has been realized at a number of British universities, where professorships of applied linguistics and language teaching have been established.

The situation in language teaching in British universities certainly appears to be ripe for the kind of development and research that Professor Healey describes. It may be of interest to his readers to know that in the United States some progress has been made towards this kind of research and development. With the sponsorship of the Modern Language Association of America, a series of tests of advanced proficiency in reading, writing, listening, and speaking in five commonly-taught languages has been standardized and widely used, and with the support of the U.S. Office of Education the reviewes has been able to publish a survey of the language proficiency of university students in the U.S. concentrating in foreign language study.*) It would not require major adaptation to apply some of these tests and research procedures to problems in the British universities.

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*) A brief account of this survey is given by J. B. Carroll, "Foreign language proficiency levels attained by language majors near graduation from college," *Foreign Language Annals*, 1967, 1 (2), pp. 131–151. The full report is entitled *The Foreign Language Attainments of Language Majors in the Senior Year: a Survey Conducted in U.S. Colleges and Universities*, Cambridge, Mass.: Harvard Graduate

Professor Healey's book is a thoughtful and penetrating discussion of issues in foreign language teaching at the university level that should be of interest and value to all concerned with these issues – not only to the professional language teacher but also to those who make educational policy.

JOHN B. CARROLL, Princeton, USA

VON HENTIG, HARTMUT, *Systemzwang und Selbstbestimmung. Über die Bedingungen in der Gesamtschule*. Stuttgart: Ernst Klett 1968. 176 S. DM 9.50.

Has the time come to abandon the interpretation of the aims of education in philosophical or metaphysical terms, and instead to mediate the link between school and life by a systematic analysis of present-day society? Hartmut von Hentig believes it has. In the ferment of debate over the reform of the West German school system this book is timely. Written by an influential member of the German Education Council (*Deutscher Bildungsrat*), the educational innovations it proposes have already received the approval of Schelsky and other sociologists.

The book divides naturally into two parts: the first section consists of sociological analysis which is to some extent a reasoned justification for the concrete proposals for educational reform which constitute the second section. Von Hentig's analysis leads him to conclude that it is imperative for equality of opportunity to be realised more fully. Moreover, each individual should, as far as possible, be free to decide for himself (*Selbstbestimmung*) the educational options he shall choose. He recognises, however, that forces within the social system itself (*Systemzwang*) may run counter to individual wishes.

Chapter II delineates the general aims of the new comprehensive school that must arise. These may be political, occupational, or more narrowly "cultural." In the political field the main problems of our society must be treated, and ways pointed to resolve them which do not infringe the rights of the individual; at the same time, the concept of equality of opportunity must be understood and realised in practice within the school itself. Some English-speaking readers may note this "politicisation" with apprehension, but the problems of German society find an echo elsewhere. In contrast, the occupational goals of such a school are more readily acceptable: to show how work facilitates the business of living; to demonstrate the value to the individual of occupational mobility; and to learn how technology can be a liberating force. Among strictly educational objectives may be included a realisation of the utility of certain knowledge; the promotion of rationality and of the powers of communication; and last but not least, the strengthening of individualism. If any criticism can be levelled at these aims, it is surely that, although couched in societal language, some do not differ from those inherent in an older European tradition, and are no less philosophically justifiable.

Nevertheless, whilst the former matrix moulded only the few, this new formulation is valid for all children. Von Hentig maintains it can only be realised within a comprehensive school, and must be conceived differently in terms of the content of education. The old pattern of disciplines must be replaced by unified themes.

School of Education, 1967, and is now available only in microfiche or photographic hard-copy form as Document No. ED 013-343, ERIC Document Reproduction Service, The National Cash Register Company, 4936 Fairmont Ave., Bethesda, Maryland 20014.

Such themes must relate directly to politics, society and the world of work; to health and leisure; to systems of communication and abstractions, from language to the symbolic communication systems of art and mathematics; to science and technology; and to more mundane practical skills, from typewriting to car-driving. Such themes are not to be viewed *sub specie aeternitatis*, for in a decade their nature may change radically. But they should form the "common core" of the curriculum, to which should be added a differentiation varying according to the individual. This may be expressed in terms of more languages, "more" history, the inclusion of the social sciences, more abstract mathematics, a more detailed treatment of the individual sciences, and aesthetic, technical and practical "subjects." The general principle should be that of utmost flexibility in the arrangement of options. Such a proposal is not entirely novel, since it bears resemblances to the best American high school practice. In terms of cost – which is hardly mentioned – all such divergences from the traditional are inevitably more expensive. But, as von Hentig would undoubtedly be the first to admit, this is a blueprint for Utopia – and no less worthy of consideration for that.

In his concluding chapter the author discusses some of the organisational issues that he has dealt with elsewhere in his writings. His general pattern for post-primary education is that of a 6-year differentiated comprehensive school, followed by a "college" of 2–4 years duration. The shorter courses in the "college" would be specialised in a variety of ways and lead on to corresponding forms of specialised higher education. An academic course of four years would include part of the present university studies: to five compulsory subjects – political science, language, science, art and sports – would be added choices from no less than 33 options. Improved guidance services and greater individualisation of instruction would better the chances of success and relieve the burden on the universities.

This thought-provoking book should be read everywhere by those engaged in educational innovation. West German educators, even later in propounding reforms than their English counterparts, have been able to learn from others' mistakes. Von Hentig's work is typical of the new synthesis that may arise from a dialectic of dualism between traditional and societal approaches to the curriculum; between the academic and the vocational dichotomy; between units of instruction based on disciplines or on areas of interest. But one may well ask, in this educational quarrel of Ancients and Moderns, whether old and new in education do not somewhere share a common ground.

W. D. HALLS, Oxford

I. HERZOG, KLAUS, "Technologische oder ökonomische Lösung des Schulbauproblems". II. ODDIE, GUY, "Wirtschaftlichkeit im Schulbau". *Studien und Berichte 10*. Berlin: Institut für Bildungsforschung 1968. 307 S. DM 10.

I.

Technologische oder ökonomische Lösung des Schulbauproblems.

Der Autor formuliert sein Thema von vornherein antithetisch. Der technologischen Lösung des Schulbauproblems in der Bundesrepublik stellt er die ökonomische gegenüber. Die technologische Lösung ist nach Herzog gekennzeichnet durch eine

Anhäufung technischer Auflagen im Schulbau. Additive Raumprogramme, übertrieben hohe hygienische und bauliche Bestimmungen bewirken eine unökonomische Planung und Gestaltung der Schule. Die technologische Lösung ist keine, weil sie eine ökonomisch sinnvolle langfristige wie kurzfristige Schulbauplanung verhindert. Sie zeichnet sich aus durch das Fehlen ökonomischer Bremsmechanismen. Unter diesem Aspekt untersucht der Autor "die Definition der Schulbauaufgabe nach geltenden Richtlinien" und prüft diese "an den Ergebnissen zweier extremer Beispiele". Die von Herzog als technologische Lösung formulierte Rationalisierung orientiert sich an folgenden Punkten:

1. Festlegung einzelner und wiederholbarer Schulmodelle
2. Aufstellung eines umfassenden Raumartenkatalogs und einheitlichen Raumprogramms
3. Einführung einer internationalen Modularordnung
4. Überarbeitung und Abstimmung der Schulbaurichtlinien
5. Industrialisierung des Bauens
6. Elementierung von Bauteilen für den Schulbau
7. Produktion großer Serien.

Diese angestrebte Rationalisierung kann – so der Autor – das Schulbauproblem nicht lösen, weil sie "Industriestruktur und Beschäftigung in regionaler Sicht" nicht beachtet sowie "Chancengleichheit im Wettbewerb um Schulbauaufträge" nicht gewährleistet. Dies ist das Ergebnis der Prüfung an Hand "zweier extremer Beispiele". Wenn man diese Prämissen berücksichtigt, erscheint es durchaus stimmig.

"Schlüsselgröße für die ökonomische Lösung des Schulbauproblems sind die Kostenlimits". Grundidee dieser Lösung ist, Kostengrenzen je Schülerplatz aufzustellen und Mindestgrößen für die Arbeitsfläche je Schüler einzuführen. Der Gesamtaufwand für eine Schule errechnet sich dann multiplikativ aus Schülerzahl und festgesetzten Kosteneinheiten je Schüler. Voraussetzung solcher Kostenlimits ist eine Kostenplanung, die die Kosten den einzelnen Bauelementen zuordnet und auf diese Weise eine größere Einsicht in die Verhältnismäßigkeit von Mitteleinsatz und Ergebnis ermöglicht. Innerhalb eines solchen Systems würde sich dann das Rationalitätsproblem im Schulbau auf die Festsetzung von Mindestanforderungen in Form von Schulbaurichtlinien und Schulbauempfehlungen beschränken. Die ökonomische Lösung, so wie sie Herzog definiert, erscheint ihm in jeder Hinsicht als optimal. "Sie wäre bildungspolitisch sozial, weil sie allen Schülern und Lehrern die Chance gibt, gute Schulen bei angemessenem Investitionsaufwand zu erhalten und sie wäre wirtschaftspolitisch sozial, weil sie allen, die zum Schulbau Leistungen beitragen können, die Chance zugesteht, die Leistungen ohne Wettbewerbsbehinderungen zu erbringen (weil nicht nur Fertigteilbau zum Zuge käme – d. Verf.). Gibt es ein liberaleres und besseres System, mit der als Grundphänomen der Ökonomie gegebenen Knappheit der Mittel fertig zu werden?" Die Antwort kann nur lauten: nein. Wenn das System tatsächlich bei uns hält, was der Autor verspricht, dann ist kein besseres System denkbar. Allerdings ist es angebracht, die Argumentation des Autors in dreifacher Weise kritisch zu beleuchten:

1. Der Autor selbst nennt seine Beispiele extrem. Dessenungeachtet leitet er aus ihnen weitreichende Folgerungen ab, die einen Informationswert suggerieren, den dieses Material nicht haben kann. Diese Information wird auch auf außerökonomische Sachverhalte ausgedehnt, so daß dem nicht eingeweihten Leser die Aufwendigkeit im deutschen Schulbau generell und bis ins Detail bewiesen zu sein scheint.

2. Richtig ist, daß in der BRD technologische Gesichtspunkte stärker betont werden als sachlich notwendig ist. Unbestreitbar wird man in Deutschland ökonomische Fragen stärker als bisher beachten und die Schulbaupolitik mehr nach ökonomischen Gesichtspunkten betreiben müssen. Insofern liefert die Herzogsche Schrift positive Impulse. Andererseits suggeriert die in ihr verwandte polarisierende Formel – technologisch oder ökonomisch – Alternativen, die in dieser Ausschließlichkeit nicht bestehen, und die den Blick für das Mögliche eher versperren als freilegen.

3. Schließlich ist zu kritisieren, daß Herzog die in einer Reihe von Ländern in der BRD begonnenen empirischen Untersuchungen und kostenplanerischen Ansätze ignoriert, so daß der nicht informierte Leser glauben muß, im bundesrepublikanischen Schulbau würden ökonomische Probleme völlig außerachtgelassen. Gerade aber eine kritische Auseinandersetzung mit den hier angestrebten methodischen Lösungsversuchen hätte für die weitere Arbeit sinnvolle Anregungen geben können und hätte sich konstruktiv in die allgemeinen Bestrebungen eingefügt.

NIZAN RAUCH, Berlin

II.

Wirtschaftlichkeit im Schulbau.

Mit der Übersetzung der bisher nur in englischer und französischer Sprache vorliegenden Studie "Wirtschaftlichkeit im Schulbau"*) hat die Max-Planck-Gesellschaft eine wichtige Voraussetzung geschaffen für die breitere Beachtung dieser von Guy Oddie, dem OECD-Berater für Schulbaufragen, verfaßten Arbeit.

Der Autor unternahm den dankenswerten Versuch, die in den Diskussionen der OECD-Planungsteams als vordringlich erkannten Aufgaben und Lösungsansätze für eine rationale Schulbauplanung darzustellen und gleichzeitig seine intime Kenntnis der beachtlichen englischen Leistungen auf diesem Gebiet (System der Kostenlimits, Kostenanalyse, Kostenplanung und Kostenkontrolle über eine auf funktionellen Bauelementen basierende Kostenstellenrechnung) einzubringen.

Eine Schulbauplanung verdient nach Oddie das Prädikat "erfolgreich", wenn die "richtigen" Schulen an den "geeigneten" Orten zur "rechten" Zeit zu "angemessenen" Kosten erstellt werden. Ins Zentrum seiner ökonomischen Schulbauplanung stellt der Autor die These, daß die Schulbaukosten für jede Schulart abhängig sind von den quantitativen und qualitativen "Standards", die die besonderen Verhältnisse und den Entwicklungsstand eines Landes widerspiegeln. Alle methodischen Anleitungen, die Oddie gibt, profilieren einen Planungsprozeß, dessen hoher Grad an Leistungs-Kosten-Transparenz im Endeffekt das Aufstellen verbindlicher Ausgabengrenzen für jedes einzelne Objekt ermöglicht und operationale Kalkulationsgrundlagen für Neuplanungen bereitstellt. Aus dem hier präsentierten Stand der Schulbauökonomie drängt sich eine Schlußfolgerung förmlich auf: Erst ein Land, dem es gelungen ist, seine spezifischen, als notwendig erkannten pädagogischen und bautechnischen Standards über funktionierende Ausgabenlimits (und nicht etwa nur Zuschußbegrenzungen) zu realisieren, verfügt über eine Schulbauplanung, die sich mit dem Adjektiv "wirtschaftlich" schmücken darf.

Das Ausgabenlimit ist Prüfstein und Krönung großangelegter, gründlicher und

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*) ODDIE, Guy: *School Building Resources and Their Effective* Use. Paris: OECD 1966. Frz. Übers.: *L'utilisation efficace des ressources pour la construction scolaire.* Paris: OECD 1966.

möglichst zentralisierter wissenschaftlicher Vorarbeit, die – nicht zu knappbemessen – erst einmal investiert werden muß, deren Erfolg jedoch – ein nicht unwichtiges Argument bei der Verteilung von öffentlichem Forschungsaufwand – mehr als in anderen Bereichen meß- und voraussetzbar ist.

Besonders eingehend werden folgende Fragestellungen behandelt: Probleme und Methoden der intensiven Nutzung von Schulanlagen (Raum-Zeit-Nutzungsmodelle); Methoden zur Ermittlung von Schulraumflächen für verschiedene Schularten; quantitative Zusammenhänge zwischen Brutto- und Nettoflächen; Baukosten und ihre Determinanten; Entwicklung von Standards der Bauausführung; Methoden der Baukostenanalyse als Grundlage für Kostenvergleiche und die Bestimmung von Ausgabenlimits; das Problem der Ausgabensteuerung während des Entwurfs und der Bauausführung (bauökonomischer Entwurfsprozeß und baubegleitende Kostenkontrolle); Kalkulation der Nutzungskosten (Bau-, Betriebs-und Unterhaltungskosten) nach den Regeln der dynamischen Wirtschaftlichkeitsrechnung.

Oddie hat sich bemüht, möglichst alle Faktoren, die Determinanten einer ökonomischen Schulbauplanung sind, anzusprechen und hilft damit dem Leser, eine zu enge Problemschau zu vermeiden. Doch da Gegenstand bauökonomischer Erörterung vorwiegend der einzelne, isolierte Schulbau ist, erweist sich als methodisch weitgehend unbearbeitet die summierte Schulbau-Wirtschaftlichkeit als Funktion regionaler Standortplanung und sich ändernder Schulsysteme. Wie wichtig diese Makro-Komponente der Wirtschaftlichkeit ist, mag eine Verlautbarung illustrieren, nach der aufgrund schulorganisatorischer Änderungen bis Ende 1969 in einem Bundesland etwa 700 Schulgebäude leerstehen werden. Die Dringlichkeit des Planungsproblems langfristiger Wirtschaftlichkeitssicherung zukünftiger baulicher Ressourcen sollte beim nützlichen Studium der um Vollständigkeit bemühten OECD-Studie bewußt bleiben.

ANDREAS FUCHS, Berlin

ROBINSOHN, SAUL B., "Bildungsreform als Revision des Curriculum." *Aktuelle Pädagogik.* Eine Schriftenreihe zur empirischen Erziehungsforschung. Neuwied/Berlin: Luchterhand 1967. 74 S. DM 11.

Die Schrift verfolgt zwei Zielbereiche. Der Autor formuliert sie mit differenzierenden Begriffen folgendermaßen: Es "wird die Notwendigkeit begründet, den geltenden 'Bildungskanon' den Erfordernissen unserer Zeit entsprechend zu aktualisieren und die Möglichkeit geprüft, eine solche Revision mit Hilfe von Methoden zu vollziehen, welche Entscheidungen über die Inhalte des Bildungsprogramms aus Beliebigkeit und diffuser Tradition hinaus in Formen rationaler Analyse und – soweit möglich – objektivierter Alternativen heben" (S. 1).

Schon diese Thematisierung der Absichten in der Studie läßt die Pragmatik und den historischen Hintergrund erkennen, in dem Robinsohn seinen Text lokalisieren will. Im Vordergrund stehen der Aufweis der *Notwendigkeit*, das Curriculum den Bedürfnissen anzupassen, und die Prüfung der *Möglichkeit*, die Curriculum-Reform mit objektiven Verfahren zu verwirklichen.

In diesem Sinne befindet sich der Text in einem zweifachen Rahmen und Robinsohn zeigt diesen auch auf: *erstens* die international sichtbare Krise in den bisherigen Verfahren der Curriculum-Konstruktion und *zweitens* die geringen Kenntnisse über die bisherigen curricularen Modelle bei den Pädagogen im deutschen Sprachraum, sowie die vordringliche Aufgabe, die Bildungsinhalte in Deutschland zu revidieren.

Der Schwerpunkt liegt im zweiten Bereich, was sich auch eindeutig in der inhaltlichen Aufgliederung veranschaulicht:

Im ersten von insgesamt vier Teilen werden drei Ansätze diskutiert, die bislang der Bildungsreform gedient haben: der "ökonomisch-statistische", der "sozialpolitische" und der "technologisch-optimierende." Die Besprechung dieser drei Einstiege führt zur Feststellung, daß sie ungenügend sind und nach einem Curriculum-Ansatz rufen.

Im zweiten Teil kommen Dimensionen des menschlichen Lebens zur Sprache, die in Zusammenhang mit "Bildung" gebracht werden können.

Der dritte Teil ist wissenschaftstheoretisch und wissenschaftspolitisch als Kernstück zu betrachten. Er geht primär auf die klassische deutsche Didaktik ein und konfrontiert sie mit einigen bekannten Modellen der Curriculum-Forschung sowie mit der persönlichen Curriculum-Konzeption des Autors. Diese persönliche Konzeption wird in der zweiten Hälfte des vierten und letzten Teiles umrissen, nachdem im gleichen Teil einige ausländische Erfahrungen zur Curriculum-Forschung referiert worden sind.

Robinsohns Modell zur Curriculum-Revision (S. 47–54) ist durch den prospektiven Charakter gekennzeichnet. Bei der Anordnung und Auswahl der Bildungsinhalte ist die künftige Bedürfnislage zu erschließen, um auf dieser Prognose den Bildungskanon aufzubauen.

Die Prinzipien und Verfahrenstechniken, welche Robinsohn vorschlägt, sind allgemein gehalten (wie die gesamte Schrift), was dem damaligen Stand der Überlegungen und Forschungsbefunde zu entsprechen scheint. Für eine rasche und weitgestreute Einführung der curricularen Ansätze von Robinsohn dürfte das von Nachteil sein. Nach dem Arbeitsziel des Autors scheint aber die Absicht nicht darin zu liegen, einfache Verfahrensstrategien vorzulegen, sondern Reflexionen über die Fundamente der Bildungstheorie bzw. des Curriculums anzustellen. In dieser Eigenschaft hat das kleine Buch im deutschen Sprachraum schon eine große Bedeutung erlangt, indem verschiedene bisherige didaktische Konzepte durch curriculare Modelle überhöht worden sind. Der Grund für diese bemerkenswerte Wirkung liegt im relativ breiten Informationshorizont des Autors und seiner Fähigkeit, die Perspektiven an der Basis der Fragestellungen anzulegen, aber auch im günstigen Zeitpunkt der Publikation.

Die vorliegende Schrift dürfte für alle Pädagogen von Interesse sein, die sich um die Prinzipien des Curriculums und die Bildungstheorie, insbesondere im Erfahrungsraum der deutschen Didaktik, bemühen. In der Bundesrepublik Deutschland besitzt sie zudem Bedeutung für die Theorie der Erziehungswissenschaft und für die Bildungspolitik.

KARL FREY, Freiburg, Schweiz

SCHÜDDEKOPF, O. E., in collaboration with BRULEY, E., DANCE, E. H., and VIGANDER, H., "History Teaching and History Textbook Revision." Series: *Education in Europe*. Strasbourg: CCC 1967. pp. 235. FF 6. 8/6. $ 3.

The Scope of the Book

History Teaching and History Textbook Revision represents a very successful attempt by four European authors to trace the development since 1945 of the trend

toward "a history of Europe," i.e., a sense of European historical unity through a review of history textbooks and their revision since 1945. Work on the report was commissioned by the Council for Cultural Cooperation of the Council of Europe. As such it supports similar efforts now underway in the social studies under the sponsorship of UNESCO and the International Schoolbook Institute, Brunswick, Federal Republic of Germany. The report is based on research efforts and conference activities of experts in the field underway since 1953. Moreover, each of the authors has critically reviewed the others' writings – thus the material is well edited, multifaceted, and international in its dimensions and perspectives.

History Textbook Revision from 1945–1965

In the first chapter O. E. Schüddekopf describes the need felt for a "new" history of Europe after 1945. He treats key points such as: definitions of "Europe" and the "West," Socialist Labor attempts to "Europeanize" education, and European common denominator movements which emphasized historical "truth" and "mutual understanding" in European school curricula. Of some importance to European minded textbook authors and publishers, however, is this author's case against the "review" (read "censorship") of textbooks by official bodies of schoolmasters and educational authorities (such as once practiced by the Textbook Section of the Education Branch of the British Army of the Rhine).

However, Schüddekopf seems to assent to the past practice of the Supreme Headquarters of the Allied Expeditionary Forces (SHAEF) which once required that textbooks should be anti-Nazi, non-militaristic, and non-"objectionable" to them. This was patently undemocratic, militaristic, and "objectionable" in itself. For a military authority to refuse to allow treatment of German militarism – by using the power of Allied militarism – is equally absurd as was their dictum to describe the German world of 1933–1945 as the "dark ages" of that nation's history. Similarly their directive that authors must avoid racial or religious discrimination in German history textbooks – when such was the official policy both in the United States and in the American military establishment itself – cannot go without some comment. In sum such mandatory "reeducation" requirements which outlawed teaching about the practice of war or preparation for war in Germany or elsewhere are meaningless in the light of the last 25 years of history. As the author says "it is senseless to regiment democratic consciousness and behavior." This SHAPE tried to do.

Textbook Revision in the Nordic Countries

Chapter two on History textbook revision in the Nordic countries by Haakon Vigander is a realistic, objective, and litertea analysis of textbook writing and content in Scandinavia. Past transgressions, obsolesence, passé traditions, and errors of judgment in textbooks are willingly admitted and accurately cited in proportion to their use. However, the work of the Scandinavian Commissions of Experts on Nordic history (established in 1934–35) is worthy of emulation. These commissions review textbooks, suggest revisions, and in many ways help to provide additional information, correct misstatements of facts, and thereby to reduce misunderstandings in textbooks. Through the impetus of the Norwegian Ministry of Church and Education in 1938 and again in 1951, textbooks in Nordic were approved for use in the schools only after examination by experts in the other Scandanavian countries.

The Nordic Association has ambitious plans for future publications and has established its central archives near Stockholm. The Association is also pressing for the inclusion of the political history and institutions of neighboring Nordic countries in new textbooks for civics. The ultimate hope is to so revise history textbooks and teaching that a national, Nordic, European, and global point of view will each be fairly represented. Given adequate financing, other impressive objectives of the Association, e.g. contacting and assisting authors in the preparation of their manuscripts and influencing teacher training courses, will be possible.

Council of Europe Conferences from 1945–1965. Some Results

The European Idea in the Teaching of History. In the third chapter Vigander joins E. H. Dance and E. Bruley in an analysis of the "European idea" in the teaching of history, bias in history teaching and textbooks, and "periods" of history. These three authors review the findings of six conferences on history textbooks held from 1953–1958 under the auspices of the Council of Europe. From these conferences emerged an awareness of the validity of such concepts as "a European view," "the European concept," and a European "attitude," "spirit," "point of view," or "idea" in the history of the peoples living between the Atlantic Ocean and the Urals.

Widespread agreement was reached by conference participants on each of the following points. First, that European nations and states must co-exist in friendship, peace, and mutual cooperation and collaboration. Second, history teaching and textbooks must not be used as vehicles for political propaganda. Third, "each age must rewrite history in accordance with its own exigencies," based on new aims and the results of recent scholarship. And, fourth, that a European history is compatible with education for world mindedness as well as with the study of local, national, or regional history, e.g. of the Benelux or Scandinavia.

Bias in History Teaching and Textbooks. E. H. Dance finds that the principal aims of history teaching are to transmit a body of conventional knowledge to the student, to develop the pupil's appreciation of his relationship to his past, present, and future society, and to develop one's ability to think objectively and inductively. The textbook can greatly assist in the realization of the first two objectives, but it is the teacher who is primarily responsible for the third.

Dance expertly describes the difficulty one has in using terms such as democracy, liberty, law, aristocracy, orthodox, peasant, and civilization. This author then proceeds to describe and document national bias in history texts which is least apparent in the post-1945 German textbooks and those of the smaller countries and most obvious in those of the great powers.

For the most part, Dance does a good job in his description of built-in-bias in history texts. Yet in at least one case – his discussion of the history and treatment of democracy – he exhibits some of the same provincialism and apologetics which he has so ably scored in other nations' coverage of nationalism, nationality, and the like. He says that European democracy is "parliamentary," that this type of government "originated in England," and that "it is therefore natural that English books should see the history of self-government in Europe as a preponderately English phenomenon and should say little about democratic developments elsewhere." He seems to justify the English authors' refusal to describe other democratic developments in France, the United States and elsewhere because they were "quite new" and "quite un-English." He also finds that since this is "natural" to the English it is therefore excusable, though this is not the case for Germany and Scandinavia where the same treatment of democracy is "followed rather blindly." He finds that where "democracy has taken a decidedly un-English twist," e.g. in Sweden, the Netherlands, Poland, and the United States, the subject is covered vaguely and is rarely given its due in textbooks. Thus Dance may be too myopic in his treatment of this subject, but at least one could not say that his description of the proper study of democracy is not "un-English."

Periods of History. In the final part of this chapter Bruley discusses periods of history as he says "in an unavoidably piecemeal way." Thereafter follows a discussion of what should be taught and what has been distorted or underemphasized in textbooks of the past. Questions such as the following are asked, discussed, and answered in short segments of various length and quality: Can one speak of Europe before the Middle Ages? Why are the Byzantine Empire, Islamic Europe, and the Scandinavian countries so often overlooked in textbooks? How can pupils be taught those things which differentiate among peoples as well as those which unite them, e.g. in art, science, and philosophy? And finally what should be taught about the two world wars and current affairs, the latter being "absolutely essential for training young people in citizenship."

Some Conclusions and Recommendations. Next follows a summary of general conclusions and recommendations. Some of these are specifically for teachers and others refer to what authors and publishers of history textbooks can do to Europeanize their products. These recommendations have been discussed above and will not be reported here. For the hurried reader these five pages and the conclusions on pages 183–185 will make useful and interesting reading.

Lessons Learned from Textbook Revision

In the fourth and final chapter of this book Schüddekopf returns to discuss problems and methods of textbook revision. This is followed by a section on aims and trends for textbook work in the future and a list of important conclusions based on twenty years of experience in this field of endeavor. Schüddekopf describes various criteria developed since 1930 for the evaluation of textbooks such as objectivity, scholarship, and the exclusion of malevolence and chauvinism, and various devices for the revision of history textbooks, e.g. the bilateral agreement, textbook exchanges, international conferences, etc. He is quite pleased with the work which has been done in this field in the past twenty years, and points particularly to the establishment of the International Textbook Institute in Brunswick. But not all of this has been done without criticism. For instance, in 1955 the *London Times Literary Supplement* downgraded German and British historians' attempts to describe their common history from 1904–1914. East Germany and Poland have also criticized such efforts as being pure "manipulation" and claiming that bilateral agreements were reached in order to "pardon each others' misdeeds to be all the freer to commit greater ones together."

Plans for the Future

Looking to the future, this book proposes that: (1) national textbook institutes be established which can cooperate with the International Center in Brunswick; (2) that new and better textbooks, rather than textbook revision, become the goal of this movement, and (3) that national, European, and world history be taught as a unit by "international" teachers of history who know their Asian, African, and American studies as well as national and European history. The authors all subscribe to the belief that the history of each people, their tribes, and regions must be taught, yet this history should "be seen as part of the history of Europe, the Western World, and especially the whole of mankind."

Reviewer's Summary Evaluation

This closing statement in the book is admirable but the authors did not deliver on all that is implied there. That is, they do admirably at rising above national provincialism and reaching the level of Western European historians. However, when it comes to Eastern Europe, the Americas, Asia and Africa (i.e. an approach to world history), then the reader does not find much help in this respect. The book is useful for the student of Western European history, but not for one interested in world history. As a whole it is well written, despite its many typographical errors, and at points it is rather disjointed-reading more like a conference summary than a unified piece. The four appendices are of little value since most of this same material is summarized in the text.

In sum, the first 186 pages of this book can be read with profit by students of history and comparative education. The purpose of the book is fulfilled, but the mission of the textbook revisionists is a long way from realization. Perhaps they are right to admit as often as they do that to revise textbooks is not enough. To influence significantly the teaching of a truly European history it is necessary to capture the minds of the teachers and the trainers of teacher trainers. Just how to do this is not described in this book. But that may be the subject for another even more useful volume.

Parallel Studies

As one indication of the current importance of self-criticism and the search for objectivity in the field of history textbook review and revision is the fact that a joint publication by the American Historical Association, the National Council for the Social Studies, and Phi Delta Kappa, entitled *As Others See Us: An International View of American History*, has been published recently by Houghton Mifflin, Boston, Mass. This book deals with Canadian, Danish, French, Finnish, Romanian, Soviet, Swedish and other national views of, e.g. the continuing racial problem in the U.S. and recent attempts to solve it. The book is published for use by high school students as a supplementary history text in their classes. Surely the impetus of the history textbook revision movement is partly responsible for the recent appearance of articles such as "Should NCSS Evaluate Textbooks" in *Social Education*, March, 1969, which is the official journal of social studies teachers in the USA.

RUSSELL FARNEN, Nashville, USA

INSTITUTE NOTES

Twenty-three experts, specialists in modern mathematics from seventeen countries (Algeria, Argentine, Belgium, Canada, Denmark, Fed. Rep. of Germany, France, Hungary, Ireland, Israel, Japan, the Netherlands, Switzerland, the United Kingdom, the USSR and Yugoslavia) met from 21st to 26th October 1968 at the Unesco Institute for Education in Hamburg to examine problems connected with further training of mathematics teachers at secondary level.

The aim of the meeting was to draft a manual for the use of authorities in charge of mathematics teaching, on the importance of modern mathematics for other subjects and the necessity for a mathematics reform at secondary level, both as regards content of the mathematics, its techniques and methodology, and regarding preservice and inservice training of mathematics teachers, and dissemination of information. The manual will be published during the first quarter of 1970.

From 28th to 29th November 1968 a Steering Committee met at the Institute in order to prepare an expert meeting on "Aims and Factors of University Reform: The case of the Federal Republic of Germany," which is to take place from 9th to 13th June 1969 in Hamburg. The Committee defined the type of Expert Meeting to be held, reviewed the background documentation to be provided, drew up a tentative ist of participants and agreed upon the way of presentation of the results.

From 9th to 14th December, 1968, the Unesco Institute was host to an international meeting of twenty-two experts from Belgium, Czechoslovakia, the Fed. Rep. of Germany, France, Sweden, the United Kingdom and the USA on "The Use of Radio and Television in Teacher Training." Discussions mainly concentrated on the following topics: (a) The use of radio and television in the initial training of teachers, both in their academic and in their professional training; (b) The use of radio and television in the in-service training of teachers, both in their academic training and in their professional training; (c) Problems of feed-back, evaluation and research raised by the use of these methods; (d) The conditions under which it is profitable to use radio or television or both in the training of teachers.

"The Education of Teachers" was the subject of an international meeting of twenty-three experts from Chile, Czechoslovakia, Denmark, France, Fed. Rep. of Germany, Hungary, Ireland, Japan, Sweden, the United Kingdom, the USA, the USSR and Yugoslavia, which took place at the Institute from 20th to 23rd January, 1969. This meeting was devoted to the discussion of the research aspects of teacher education and aimed at a better understanding of the manifold implications of recent social and technological change as regards structure and patterns in this work. Group work dealt with the following topics: (1) Organisation of in-service and pre-service training; (2) Specialisation in the education of teachers; (3) Techniques of teacher education.

Reports on these two international meetings on teacher education will be jointly published in 1970.

The annual meeting of the Governing Board of the Unesco Institute was held in Hamburg from 8th to 10th April, 1969. It discussed and adopted the programme and budget for 1969–1970, and deliberated the overall future policy of the Institute. The Board adopted a policy paper giving priority "to the activities which directly aim at promoting educational research, particularly in the field of empirical research and in comparative education." Prof. Gilda de Romero Brest, Argentine (member of the Governing Board) and Prof. Zoya Malkova, USSR (alternate member) were unanimously appointed members of the Editorial Board of this Review.

On 11th and 12th April the Editorial Board of the International Review of Education convened for its annual meeting. Discussions concentrated on the present state of preparation of special numbers, the improvement of publicity, and financial questions. The Board decided that from now onward advertisement material shall be included in the Review and that, beginning with 1970, the Review shall have a new cover.

In November 1968 the International Association for the Evaluation of Educational Achievement (IEA) held a meeting for the International Committee for French as a Foreign Language at the Institute. This Committee reviewed the item analyses and comments on the pretesting which had taken place between March and October, 1968. It is hoped that the final versions of all French tests will be produced by July, 1969.

In December 1968 there were meetings of the IEA Council, Standing Committee and Bureau in the Institute, where the general progress and policy of IEA were reviewed.

The Civic Education Committee met in London in February, 1969, and after a review of all the item analyses final versions were prepared and sent out for comment.

In March 1969 IEA handed in to the US Department of Health Education, and Welfare, Office of Education, Bureau of Research, and to the *Stiftung Volkswagenwerk* its final report of Stage 1 of Phase 2 consisting of two volumes.*)

The Bureau held further meetings in February in Los Angeles and April in Hamburg.

The year of 1969 is the dry run year for all research institutes participating in Science, Reading Comprehension and Literature. The objects of this small scale exercise are to check the administrative procedures of the field testing, to check the procedures of the return of data to the Data Processing Unit, and to check the data processing procedures. The full testing of these three subjects will take place in 1970/71. The dry run for French, English and Civic Education will take place in 1970 and the full testing in 1971/72.

Since it proved difficult for the Unesco Institute to accomodate the increasing IEA Central Staff, the decision had to be taken to move IEA headquarters to Stockholm, where they will be housed in the Wenner-Gren Center (Sveavägen 166, 8 tr.) as from July 14th, 1969. The IEA Data Processing Unit is now in New York, Columbia University, but it is also planned to use the *Datacentralen*, Stockholm.

PUBLICATIONS RECEIVED NOVEMBER 1968–MARCH 1969
NOVEMBER 1968–MÄRZ 1969 EINGEGANGENE VERÖFFENTLICHUNGEN
PUBLICATIONS REÇUES ENTRE NOVEMBRE 1968 ET MARS 1969

except those already reviewed. The mention of a book in this list does not preclude a later review.

mit Ausnahme von solchen, die bereits besprochen worden sind. Die Aufnahme eines Buches in diese Liste schließt eine spätere Besprechung nicht aus.

exception faite de celles qui ont déjà été analysées. L'énumération d'un livre dans cette liste n'exclut pas une analyse ultérieure.

ALTBACH, PHILIP G., *Student Politics in Bombay*. London: Asia Publ. House 1968. pp. 218. 45/–.

AMENDT, GÜNTHER (Hrsg.), *Kinderkreuzzug oder beginnt die Revolution in den Schulen?* Reinbek/Hamburg: Rowohlt 1968. 198 S.

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FORTHCOMING ISSUE

The next number of the Review will be a Special Number and entirely devoted to the theme

PRESCHOOL EDUCATION: ASPECTS AND PROBLEMS

The editor of this number is Gilbert de Landsheere, Professor of Psychology and Education, Institute for Psychology and Education, University of Liège.

Among the contributions will be:

B. Trouillet, Fed. Rep. of Germany	L'éducation préscolaire: Quelques aspects et problèmes internationaux
W. Schultze, Fed. Rep. of Germany	Vorschulerziehung in der Diskussion. Eine Zwischenbilanz der Reformbestrebungen in der Bundesrepublik Deutschland
S. and M. Smilansky, Israel	The Role and Program of Preschool Education for Socially Disadvantaged Children
P. Olmsted, C. Parks, and A. Rickel, USA	The Development of Classification Skills in the Preschool Child

These titles are as yet only provisional and may be altered before publication.

The Editorial Board wishes to acknowledge with thanks the help of Mr. Bernhard Schiff, Walsrode (Fed. Rep. of Germany), and Mr. C. R. E. Gillet, Henly-on-Thames (England), on this number.

EDITORIAL

This Special Number deals with a range of problems concerning the conditions in which pupils work in schools, educational guidance, ways in which pupils are influenced and the various activities of pupils in the environment of the school. Because this range of problems is so wide, only those most directly connected with children's participation in class work have been included – and within this limitation, only those about which we have found authors willing to contribute. Problems of school organization are beyond the scope of the present review. Two numbers of the *International Review of Education*[1]) have already been devoted to these. Nor have we included problems of programmes and textbooks, or those many problems connected with the introduction of innovations such as team teaching, streaming, "prefabricated" lessons and applications of the computer. The latter were discussed in a Special Number of the *Review* published in 1968.[2])

In spite of the limitations imposed, a wide range of problems is covered by this number of the *Review*. We first present problems of pupils' work and of the teacher's work with pupils, and the attempts to modernise these methods. Discussion is developed against a background of the etiology of school backwardness and the influence of school organisation on pupils' progress. The article on "The Modern School, Individualisation in Teaching, and Audio-Visual Aids" by G. Berger, *Maître Assistant* at the *Centre universitaire expérimental de Vincennes*, is a good introduction to the whole Number. The author calls our attention to the quantitative and qualitative crisis in education caused by the "school explosion", the continuing development of the curriculum, the pressure of the labour market and the rapid growth of technical aids to teaching. These developments all diminish the possibility of individualisation in the contemporary school. The article emphasises the importance of new and rapidly growing types of school equipment such as language laboratories and teaching machines, and their relation to individualisation.

Articles by M. Skatkin, the Head of the Division of Didactics at the Institute for General and Polytechnical Education in Moscow, and W. Okoń, the Director of the Institute for Education in Warsaw, deal with pupils' thinking during the process of instruction. M. Skatkin concentrates on the development of independent thinking in children and adolescents. He proves the need to form independent and creative attitudes, since these, together with maximum activity in school are essential parts of the preparation for modern life. The formation of these attitudes is particularly fruitful when pupils bring more and more independence to the solution of problems, while the very process of problem solving resembles in some respects the process of scientific research. The application of a "scientific method" to lessons in various subjects as well as in extra-curricular work positively influences the average level of pupils' achievement in the classroom. It also favours the development of the aptitudes of gifted children.

W. Okoń draws attention to heuristic thinking and learning which, with programmed learning is compared with traditional teacher-pupil instruction. Of these three ways of organising pupils' work, the first demands most activity and exerts the greatest influence on progress. This is so because both phases of heuristic thinking, that is, the production and verification of hypotheses require maximum cognitive effort by the pupil. In programmed learning the effort is not so intensive, and often consists of steering reactions rather than steering thinking. In traditional instruction the effort is reduced to the comprehension and storage of information.

E. Meyer, Professor of Education at the *Pädagogische Hochschule* Heidelberg, deals with the problem of how group work intensifies the teaching-learning process. He underlines the great difference between individual work and group work in the solution of problems, and indicates that the difference is connected with motivation, which develops better during the course of group work, and calls attention to the dynamics of work which are hindered more in individual than in group work. Group work has merits which enrich traditional methods and favour the increase of activity in classwork and homework alike.

Problems of communication within a group of pupils and between the group and the teacher are described by John D. Williams, a staff member of the *Centre de recherches en psycho-mathématique* at the University of Sherbrooke. Although his article is devoted to the learning of mathematical techniques, it presents many general educational problems concerned with didactical experiment, group structure and group interaction, the heterogeneity and homogeneity of groups, aspects of the learning environment and above all, many features of communication in the learning situation. The author's work has been based on the ideas and techniques of Z. P. Dienes.

J. Konopnicki, the Director of the Institute of Education of Cracow University, deals with the causes of decreasing participation in schoolwork by some pupils. Causes which are not discovered and therefore ignored at the proper time lead to school backwardness and this is often the beginning of a pupil going astray. The author analyses these causes and the way the pupil's difficulties cumulatively increase in four phases in the progress of school backwardness. The author's work is based on original research in this field.

A second article by J. D. Williams, "Instructional Agents as Transmitters of Research Findings", gives an account of certain aspects of the learning situation which may be affected by research findings. These aspects are as follows: the structure of the subject-matter, the sequence of its parts, the embodiment of the subject-matter, pacing, the accommodation of pupils' responses, and the responsiveness of the agent to the pupil's behaviour. The instructional agents which can control these aspects are used to implement research findings. An interesting part of the article is devoted to the comparison of some instructional agents, for instance: conventional textbooks, films, tape-recorders and mathematical apparatus. Programmed instruction and conventional teachers are mentioned. All these agents transmit products of research as "hard facts", general principles and theories.

The article by T. Husén, the Head of the Department of Educational and Psychological Research, School of Education, University of Stockholm, differs in content from the other articles, which are broadly concerned with promoting the effectiveness of pupils' learning in schools. This one, however, deals with the increase of social aspirations connected with the level and quality of instruction. The author notes that an increase of aspirations is a common phenomenon in many countries, and he indicates the need to provide a school system which takes into account the satisfaction of these aspirations and enables the maximum development of pupils' abilities to this end. The author proposes transformation of the Swedish selective system to a comprehensive one to be a change in the right direction.

C. Kupisiewicz, Professor of Education, and A. Tukalski, from the Institute for Education, Warsaw, present an interesting communication in which they propose a new way of programming at present called the "block" method, because the intellectual effort of the pupil is concentrated on large rather than small blocks of information.

Finally H.A. Thelen, Professor of Education at the University of Chicago, suggests in his conference report a very interesting innovation – a new way of learning called learning by teaching. We are sure that this contribution will evoke the interest of our readers, and that it reflects a valuable attempt to verify this new conception empirically.

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2) Vol. XIV, 1968, No. 2: "Uses and Values of the Computer in Education", edited by R. Wolf.

Wincenty Okoń, Warsaw
Editor

CONDITIONS DE L'ECOLE MODERNE INDIVIDUALISATION DE L'ENSEIGNEMENT ET MOYENS AUDIO-VISUELS

par GUY BERGER, Paris

Introduction

S'il est un terme à proscrire, c'est bien celui de "moyens". La réflexion pédagogique n'en a que faire. Ou elle est assurée de ses objectifs et de ses démarches, et alors la panoplie des moyens est aussi abondante qu'indifférente – ordinateur, télévision, laboratoire de langues, magnétophone ou tableau noir prennent leur sens des rôles qu'on leur fait jouer, des situations où on les insère – il faut apprendre seulement à manipuler ces moyens, à les combiner, à en tirer le maximum, comme on prétendait autrefois apprendre aux futurs instituteurs à jouer de leur voix, de sanctions ou de "trucs" les plus divers. Ou bien l'apparition de moyens nouveaux reflète une crise ou du moins une transformation qui met en cause objectifs et démarches de cette réflexion pédagogique, et dans ce cas le mot de "moyen" avec sa dévalorisation implicite devient imprudent, car il camoufle sous une terminologie anodine le signe et l'agent d'un changement profond.

C'est dans cette deuxième perspective que nous voudrions nous situer. Il faut abandonner toute optique purement instrumentale pour comprendre ce que les moyens audio-visuels annoncent ou rendent possible, s'installer au coeur d'une réflexion sur les nécessités de l'enseignement de nos jours, réfléchir au niveau du système pour en garantir le plein emploi et donc l'efficacité.

Crise quantitative et crise qualitative de l'enseignement

Malgré l'abondance de la littérature sur ce sujet, il nous semble indispensable de rappeler les conditions concrètes qui caractérisent l'enseignement dans la plupart des pays industrialisés et plus encore dans les pays en voie de développement. C'est en fonction de ces conditions que s'est construite une problèmatique qui, partant d'un ensemble de mesures de soutien d'un système chancelant, a conduit les moyens audio-visuels de leur premier rôle qui était d'illustration ou de palliation à celui d'agent de transformation du système lui-même. C'est surtout en fonction de cette problèmatique que l'on peut mieux saisir pourquoi les thèmes de la participation des élèves à l'enseignement qu'ils reçoivent et de l'individualisation de celui-ci, thèmes qui étaient déjà au centre de tout ce qu'on a appelé, entre les deux guerres, les méthodes actives, ont subi un brusque regain. D'expression de la générosité de certains pédagogues et du souci de la personne de l'enfant, ils sont devenus les fondements de la rationalisation et de la rentabilisation de toute procédure pédagogique.

En nous attachant aux conditions de l'enseignement, et sans parler de l'évolution des méthodes et doctrines ou des apports de la psychologie et des diverses sciences, nous pouvons discerner quatre grandes séries de faits, apparemment tous convergents.

1°) "L'explosion scolaire": à des degrés divers, mais pour des raisons différentes, elle caractérise à peu près également tous les pays ; nous nous contenterons d'en rappeler les aspects essentiels

– l'essor démographique qui s'est produit presque universellement, et qui, ajouté souvent aux conséquences de la guerre, a déséquilibré la pyramide des âges;

– l'augmentation de la "demande d'enseignement". Elle s'est traduite dans la plupart des pays par l'allongement de la scolarité obligatoire, ce qui a modifié de fond en comble la structure des enseignements moyens et supérieurs. Ailleurs, elle a surtout entraîné une baisse plus ou moins considérable du taux d'analphabétisme. Partout elle a déterminé la mise en place de structures d'éducation permanente s'adressant surtout à des adultes;

– l'accès à l'enseignement de sujets appartenant à des classes sociales culturellement défavorisées.

Une formule résume approximativement les conséquences de cette "explosion": d'enseignement d'élite, chargé de sélectionner l'élite, et de faire participer, tant bien que mal, ceux qui n'achèveraient pas leur scolarité aux valeurs de l'élite, l'enseignement s'est découvert, bon gré mal gré, enseignement de masse.

2°) Du point de vue des contenus, la mutation est au moins aussi sensible et générale:

– accroissement accéléré des connaissances et de leur diversification;

– volume de plus en plus considérable de l'information scientifique et technique;

– transformation de certaines disciplines traditionnelles et des conditions de leur enseignement, grâce, en particulier, à la linguistique pour l'apprentissage de la langue maternelle et des langues étrangères, et grâce aux mathématiques modernes;

– ouverture de plus en plus grande de l'école sur le monde, ce qui détermine, à tous les niveaux, l'introduction de disciplines nouvelles telles que les sciences sociales, l'économie, la technologie etc. . .

Bref, la masse, la diversité, la spécificité des connaissances à acquérir ont, simultanément, augmenté.

3°) La pression du marché de l'emploi s'exerce dans le même sens que les facteurs précédents : exigence d'un nombre de plus en plus grand de sujets hautement qualifiés. Mais dans la définition de cette qualification, on voit apparaître une alternative dont nous aurons à reparler. D'un côté, on entend par elle la capacité de remplir des tâches bien définies, c'est-à-dire la spécialisation; de l'autre, la capacité de répondre à la mobilité croissante de l'emploi, c'est-à-dire une formation générale permettant, de s'adapter aux situations nouvelles, et centrée sur le pouvoir individuel d'apprendre.

4°) Il faut noter sur le même plan la mise à la disposition de l'enseignement d'un grand nombre de nouveaux moyens empruntés soit aux techniques des mass-média (radio, cinéma, télévision), soit à celles des ordinateurs (machines à enseigner, stations d'interrogations collectives), soit enfin aux diverses techniques de reprographie,

Si nous voulons faire le bilan de ces diverses conditions, elles semblent remarquablement homogènes et pouvoir s'exprimer, presque sans ironie, en termes d'industrie: mettre sur le marché la plus grande quantité possible de produits, à la fois diversifiés et de qualité, et cela sans pouvoir augmenter indéfiniment le nombre des agents de production, en disposant d'une matière première "tout venant", mais en pouvant bénéficier des techniques les plus fines.

Les lignes directrices semblent elles aussi se dessiner clairement, l'enseignement de masse utilisant les techniques de transmission collective de l'information, ne devrait pouvoir se développer que par une rationalisation systématique permettant d'augmenter également production et productivité mais tournant le dos, définitivement, à l'idée d'un enseignement centré sur l'élève, à la souplesse, à la vie, et à la limite au respect de la personnalité individuelle.

Le paradoxe, c'est qu'il n'en est rien, ni en fait, ni en droit.

Le passage à l'enseignement de masse, l'afflux des connaissances nouvelles, la nécessité de répondre à des besoins multipliés, les apports de la technologie moderne ont contribué, plus peut-être que ne l'avait fait toute la réflexion pédagogique depuis Rousseau, à dénoncer l'énorme carence de l'enseignement, son incapacité d'assumer la diversité des personnes, des aptitudes et des intérêts, son installation paresseuse dans une perspective "sélectionniste" où le nombre d'échecs devenait presque l'indice de la difficulté et donc de la valeur de ce qu'on enseignait.

Pour intégrer la masse des enfants, quelle que soit leur origine sociale, pour donner un sens aux énormes investissements en argent et en efforts intellectuels, il faut rentabiliser l'enseignement, être efficace au sens pédagogique du terme, c'est-à-dire redécouvrir que sans l'enfant on ne fait rien, que bien enseigner ne signifie rien, si on ne tient pas compte des besoins, des intérêts des rythmes particuliers, des algorithmes d'apprentissage, si on ne diversifie pas l'enseignement jusqu'à l'individualiser.

Le second volet du paradoxe et non le moindre, c'est que ces moyens techniques, qui pour certains sont le symbole d'une civilisation industrielle aliénante, peuvent devenir dans une large mesure l'instrument de cette individualisation.

Nous ne dirons qu'un mot des laboratoires de langues et de tout ce qui ressort de la programmation et des machines à enseigner. Par définition, ce sont des instruments individualisants. Rythmes personnels, corrections immédiates, autoévaluation, possibilité de suivre des cheminements spécifiques à partir d'un niveau d'entrée toujours différent, tous ces aspects sont parfaitement connus. Peut-être devrait-on même insister, au contraire sur le risque de l'isolement de l'élève face à l'instrument, qui rend parfois insupportable la cabine du laboratoire de langues et qui constitue un des traits les plus déroutants du dialogue homme-machine. Par contre les moyens audio-visuels et plus particulièrement ceux qui ressortent des mass-média traditionnels semblent inévitablement collectifs. La fonction individualisante qu'ils peuvent pourtant jouer en fait n'en est que plus intéressante à analyser.

Individualisation, différenciation et stratégie d'introduction des moyens audio-visuels

Les considérations qui suivent sont à la fois d'ordre théorique et pratique la plupart d'entre elles sont issues de notre expérience des établissements équipés de circuits fermés et particulièrement du Collège Audio-Visuel de Marly-le-Roi, elles sont tirées aussi d'observations nombreuses sur l'utilisation des émissions de radio ou de télévision en circuit ouvert dans des classes.

Il nous semble d'abord nécessaire de déterminer plus exactement ce qu'il faut entendre par l'individualisation:

– dans un premier sens, elle s'oppose au travail dit collectif, c'est-à-dire à celui qui est effectué dans la classe. Le travail individuel peut être le même pour tous les enfants, l'essentiel étant qu'il soit effectué par chaque enfant séparément. C'est ce qu'en France, en particulier on appelle bien curieusement "travail personnel". Si ce peut être un moyen de contrôle, ce n'est en aucun cas une individualisation.

– dans un second sens, c'est l'idée de la différenciation selon les enfants qui prime et non pas le fait qu'une tâche soit accomplie séparément. On peut très bien l'effectuer par petits groupes avec ou sans enseignant, l'essentiel c'est que, dans une même section, des travaux diversifiés soient organisés. Il est possible de faire des distinctions plus précises. Dans certains cas, la diversification est fondée sur les différences de niveaux des élèves. Regroupés selon trois ou quatre sections, les élèves de plusieurs classes parallèles parcourent à des rythmes différents ou selon des pédagogies différentes un même programme. Mais à l'intérieur de chaque groupe l'enseignement est homogène.

Il en est de même dans un système optionnel où les enfants en fonction de leurs aptitudes, de leurs interêts ou de leurs projets professionnels sont regroupés pour certaines disciplines et s'intéressent à des sujets différents. Il n'y a pas encore d'individualisation. Enfin, on peut dans une même classe distribuer à de petits groupes d'enfants la charge de se documenter sur telle ou telle partie du programme, d'exploiter tel élément de l'information ou de se donner à eux-mêmes un sujet. Dans ce cas, c'est l'homogénéité même du groupe qui est volontairement détruite afin de favoriser l'individualisation, puis la communication entre les élèves.

– On devrait parler de préférence de personnalisation lorsqu'on s'efforce non seulement de conjuguer les aspects précédents, mais encore lorsque les sujets participent à la programmation elle-même et aboutissent à des productions individuelles ou de petits groupes.

Les procédures ainsi décrites se heurtent à un certain nombre d'obstacles que l'introduction systématique de moyens audio-visuels permet de vaincre:

1°) l'existence de la "classe": elle constitue aux yeux de la plupart des enseignants l'unité de base inévitable pour toutes les activités. De dimension réduite si possible, elle aurait une âme, un esprit, serait de haut ou de faible niveau, intéressante ou mal aimée. Le maître prétend y connaître chaque élève, mais c'est à cet être multiforme qu'il s'adresse, rabotant les différences individuelles au nom de l'esprit collectif. En fait une telle unité n'est adaptée qu'à certaines activités et est trop grande pour que chaque élève y soit suivi et trop petite pour que des options vraiment différentes y soient instaurées. Elle est sans intérêt lorsqu'il s'agit de transmettre une information. Il est donc indispensable d'imaginer des groupements plus flexibles, d'oser présenter la même information à deux cents sujets, de ne l'exploiter qu'avec deux ou trois dans certains cas.

Les moyens andio-visuels permettent de s'adresser simultanément à un grand nombre d'enfants et de libérer des enseignants pour les tâches d'observation et de travail en profondeur qu'implique l'individualisation.

2°) Le second obstacle est sans doute le maître. Prisonnier de son rôle d'informateur, il n'a parfois pas le temps de s'intéresser à ceux qui l'écoutent, isolé, face à la classe, il a besoin de la considérer comme un être homogène pour ne pas en avoir peur. Introduire l'audio-visuel, c'est déplacer la fonction du maître, c'est aussi, désacraliser l'information qui, ne venant plus d'une personne qu'on aime ou qu'on déteste peut être discutée, reçue ou refusée froidement.

3°) Prisonnier de la polyvalence de son rôle, le maître ne peut l'analyser. Il observe, contrôle, informe, aide, explique etc. ... cherchant chaque fois à adapter son message et il est contraint de s'installer à un niveau moyen, dans un mélange médiocre de tâches contradictoires. Le message audio-visuel, à condition qu'il ne prétende pas, à son tour, mêler toutes ces tâches: motiver, instruire, interroger, contrôler, introduit dans l'acte pédagogique la distinction claire entre ce qui est information collective, exploitation par petits groupes, assimilation, et transfert d'apprentissage.

4°) Quels que soient ses efforts, le maître continue à apparaître comme détenteur essentiel du savoir. Les moyens audio-visuels beaucoup plus que le livre permettent aux enfants d'accéder directement aux documents, de reproduire même à volonté l'information que le maître a donnée, ou leurs propres interventions. Mais sans centre de documentation toujours disponible, l'audio-visuel risque de maintenir la sujetion de l'élève à un savoir auquel il n'a pas accès et qui ne lui permet donc pas de prendre en charge une partie de son enseignement.

5°) Enfin on ne comprend pas l'apport de l'audio-visuel tant qu'on s'en tient au sens traditionnel du mot participation. Participer, ce n'est pas seulement répondre à des questions posées toutes par le maître, ce n'est même pas produire documents ou informations, c'est parfois s'identifier activement à l'image ou, au contraire, rester libre face à l'information parce qu'elle s'est trouvée dépersonnalisée.

Pour que les moyens audio-visuels puissent assumer ces fonctions d'éclatement de la classe traditionnelle de libération des maîtres à l'égard de certaines tâches d'information, de libération des élèves à l'égard d'une certaine forme d'autorité du maître, de mise à la disposition de tous d'un matériel complexe et diversifié qui permet toutes les directions d'analyse, il est indispensable de les penser non pas pour eux-mêmes, mais intégrés à un véritable système, voulus pour les attitudes qu'ils permettent et pour les possibilités qu'ils donnent.

L'individualisation ne peut être le résultat automatique d'un moyen technique quel qu'il soit. Même l'enseignement programmé ou par ordinateur doit être pensé non seulement en termes d'apprentissage, mais aussi en termes de vie scolaire. L'aspect collectif de leur réception, le fait que maîtres et élèves y soient spectateurs selon des groupes de dimensions indéfiniment variables font que les moyens audio-visuels ne peuvent pas être seulement un instrument de l'individualisation de l'apprentissage, mais aussi celui d'une personnalisation vraie de l'activité scolaire et donc un instrument efficace de la conquête par l'élève de son autonomie.

BEDINGUNGEN DER MODERNEN SCHULE INDIVIDUALISIERUNG DES UNTERRICHTS UND AUDIO-VISUELLE HILFSMITTEL

von Guy Berger, Paris

Man kann die Bedeutung der audio-visuellen Hilfsmittel nur ermessen, wenn man sie als Schrittmacher einer Umgestaltung des gesamten Bildungswesens versteht. Diese Umgestaltung ist mit einer quantitativen Krise des Erziehungswesens verbunden, die ihrerseits durch das Bevölkerungswachstum, größere Bildungswilligkeit, den Zugang neuer sozialer Schichten zum Bildungswesen und die Einführung neuer technischer Unterrichtsmittel bedingt ist. Diese quantitative Krise ist in Wirklichkeit qualitativer Natur, denn sie bewirkte das Bemühen um eine "Rentabilitätssteigerung" des Unterrichts, die ihrerseits wiederum neue Perspektiven eröffnete, deren wichtigste die der Individualisierung des Unterrichts ist. – Die audio-visuellen Hilfsmittel, die auf den ersten Blick ausgesprochen kollektiv erscheinen, bilden eine wichtige Voraussetzung für diese Individualisierung: Sie sprengen die Klasse, diese künstliche Einheit, die für die Information zu klein, für präzisere Lernaufgaben jedoch zu groß ist; sie befreien den Lehrer von einer Reihe von Aufgaben und erlauben ihm, sich mehr seinen Schülern zu widmen; sie ermöglichen ihm, die verschiedenen Seiten seiner pädagogischen Tätigkeit besser zu analysieren; sie verändern grundlegend das Verhältnis zwischen Lehrer und Schüler. Mit einem Wort, die audio-visuellen Hilfsmittel eröffnen eine spezifische Möglichkeit, durch die Veränderungen, die sie im Bildungswesen hervorrufen, dem Schüler zu größerer Autonomie zu verhelfen.

THE MODERN SCHOOL INDIVIDUALISATION IN TEACHING, AND AUDIO-VISUAL AIDS

by Guy Berger, Paris

It is impossible to assess the role of audio-visual aids without appreciating their role of agent in the transformation of the entire educational system. This transformation is connected with a quantitative crisis in teaching caused by the rapid population growth, by an increase in demand for teaching, by the availability of education for a wider range of social groups, and by the invention of new technological media. This quantitative crisis is in fact qualitative since it introduces concern over a necessary "effectiveness" of teaching and this itself produces new ideas of which the most important is the individualisation of teaching. These audio-visual aids which at first sight appear to be essentially collective methods, are one of the basic factors in individualisation: they break up the class, this artificial and unsuitable unit, too small for information programmes, too large for more specific activities; they relieve the teacher of certain tasks and so give him more time to devote himself to his pupils; they enable him to make a better analysis of the different aspects of educational action; they greatly alter the teacher-pupil relationship. – In brief, audio-visual aids are one of the specific means which, by virtue of the changes they bring about in the educational system, allow the pupil to achieve independence.

AUTONOMIE DANS LA PENSEE ET L'ACQUISITION DES CONNAISSANCES DES ELEVES METHODES APPLIQUEES PAR L'ECOLE SOVIETIQUE *)

par MIKHAIL SKATKIN, Moscou

La nécessité de former l'indépendance et l'activité de perception chez les écoliers est conditionnée non seulement par des raisons pédagogiques mais aussi par d'autres raisons sociales bien plus larges. Les opérations les plus difficiles, astreignantes et monotones du travail physique se mécanisent de pair avec le développement de la technique, et les connaissances de l'homme sont utilisées pour accomplir des fonctions plus compliquées et plus importantes. Le travail acquiert de plus en plus un caractère créateur. Voilà pourquoi l'école est appelée à former les élèves non seulement pour accomplir un travail pratique, mais aussi un travail créateur.

Le développement impétueux de la science fait que les connaissances acquises à l'école vieillissent rapidement. L'homme doit constamment renouveler et enrichir ses connaissances pour s'accorder au rythme de la vie. De nos jours, les études ne se terminent pas à l'école, mais doivent se poursuivre toute la vie. Voilà pourquoi il est nécessaire d'éveiller chez les élèves un esprit d'autodidacte et de leur apprendre à acquérir des connaissances d'une manière indépendante et à les appliquer d'une manière créatrice. L'expérience séculaire de l'école a montré la carence pédagogique de l'enseignement basé sur l'étude mécanique de connaissances toutes préparées. Cet enseignement abrutissait les enfants et bien souvent provoquait chez eux un dégoût pour les études et la science.

Dès les premiers jours de son existence, l'école soviétique a tâché de

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*) Traduit du russe par . . . Papazian,
Agence de Presse Novosti.

pallier ces tares de l'enseignement. Elle se posa comme une de ses tâches essentielles d'élaborer un enseignement qui développerait au maximum un esprit d'indépendance et les facultés de perception des élèves. De nombreuses difficultés de caractère pratique s'y opposeraient. Les écoles étaient mal équipées en manuels scolaires et le matériel didactique nécessaire manquait pour pouvoir faire un travail indépendant. Les instituteurs habitués pendant de longues années à mâcher la besogne des enfants ne savaient comment faire pour organiser le travail créateur et indépendant de leurs élèves. De plus, la science pédagogique à cette époque ne pouvait déterminer d'une manière exacte les voies de la nouvelle organisation du processus scolaire.

Il y a eu des erreurs et des conflits d'idées au début. Etant donné que les formes orales de l'enseignement vouant les enfants à l'étude de connaissances toutes faites, régnaient sans partage dans l'ancienne école, certains pédagogues proclamèrent que l'exposé des connaissances par l'instituteur et les études basées sur les méthodes passives ne devaient plus avoir leur place dans la nouvelle école. Ils leur opposèrent de nouvelles méthodes dites actives éveillant chez les enfants une activité motrice: telles que divers travaux pratiques et illustratifs, les expériences, les excursions, etc. On tâcha de construire le processus des études sur la base de la méthode dite "des projets". Cependant, l'expérience acquise à l'école et les recherches pédagogiques prouvèrent bientôt la faiblesse et la carence de ces initiatives et idées. La diminution du rôle de l'exposé systématique des connaissances, des sources de l'information, la surestimation du rôle de l'expérience personnelle de l'enfant, de son activité motrice provoquèrent une absence de système dans l'enseignement, une diminution du niveau de la formation générale. La pédagogie et l'école soviétiques renoncèrent à reconstruire le processus scolaire sur la base de la méthode des projets, à faire une distinction entre les méthodes actives et les méthodes passives, à opposer les formes orales didactiques aux formes pratiques de l'enseignement. Pédagogues et psychologues prouvèrent que la pensée de l'enfant peut fonctionner très activement lorsqu'il écoute les explications du maître et lorsqu'il lit le manuel et, que d'autre part, en cas de grande activité motrice, l'indépendance de perception peut faire tout à fait défaut chez l'enfant. Le centre de gravité des problèmes devint la recherche des moyens pouvant favoriser l'indépendance de perception et l'activité créatrice des élèves pendant l'utilisation de toutes les formes de l'enseignement oral, didactique et pratique. Les recherches effectuées par des psychologues montrèrent que le moment initial de la pensée coïncide avec le moment où naît un problème. L'homme commence à penser lorsqu'il doit comprendre quelque chose. Toute activité de la pensée vise à la solution de tel ou tel problème théorique ou pratique. Et chaque problème contient une question pour laquelle il n'existe pas de réponse toute faite. Il faut la chercher d'une manière indépendante.

Se basant sur ces principes théoriques initiaux, les instituteurs de toutes les disciplines scolaires ont essayé de poser pendant le processus d'enseignement des problèmes encourageant les élèves à la recherche. De plus, on conserve entièrement dans ce cas le caractère systèmatique de l'enseignement: chaque discipline scolaire est traitée dans un ordre logique et didactique extrêmement strict. C'est en cela que résident les principes essentiels de la conception soviétique, notamment l'enseignement au moyen de problèmes.

Au début, tant que les écoliers ne sont pas en mesure de résoudre indépendamment des problèmes de perception, l'instituteur conduit lui-même les recherches en mettant les élèves de la classe en présence d'exemples-types de recherches. L'exposé des connaissances sous forme de problème sert ce but. Il se distingue de l'exposé ordinaire de l'instituteur par le fait que celui-ci ne se contente pas d'énoncer aux enfants, les découvertes de la science, mais il leur montre aussi les voies de ces découvertes. Il parle aux enfants du problème qui s'est posé à la science, des hypothèses qui furent avancées par divers savants, des difficultés qui se dressèrent sur la voie de cette découverte, de la lutte des opinions, des moyens de prouver que ces opinions sont justes ou fausses.

Lorsque la science est exposée ainsi aux élèves sous forme de problème, elle ne se présente plus à eux sous forme d'un ensemble d'idées toutes faites, mais sous la forme d'une science dynamique, qui se développe. Citons comme exemple l'exposé des connaissances sous forme de problème d'une leçon d'histoire naturelle en classe de quatrième.

> L'instituteur: Vous savez que tous les corps de la nature, aussi bien solides que liquides, ont un poids. Mais l'air a-t-il un poids? Pendant bien longtemps, les gens pensèrent que l'air ne pesait rien: si l'on prend en main une pierre ou un verre d'eau, on sent aussitôt leur poids, par contre on ne sent pas le poids de l'air.
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> Un savant fit l'expérience suivante: il prit une boule métallique munie d'un robinet et la pesa. Il apprit ainsi le poids de cette boule comprenant de l'air. Ensuite, à l'aide d'une pompe, il fit le vide dans cette boule. Ayant fermé le robinet, il repesa la boule. Sans l'air, la boule pesait moins. Le savant calcula cette différence et apprit combien pesait l'air se trouvant à l'intérieur de la boule. Les savants effectuèrent de nombreuses expériences de ce genre et déterminèrent que 1 m^3 d'air pèse 1 kg 293 g. Il s'est avéré que l'air est 773 fois plus léger que l'eau.
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> Et si nous faisions nous-mêmes une expérience de ce genre. Mais nous n'avons pas de boule munie d'un robinet, ni de pompe. Prenons alors un grand matelas rempli d'air et muni d'un bouchon. Mettons-le en équilibre sur une balance. Après cela, ôtons le bouchon et réchauffons prudemment le matelas à l'aide d'une lampe à

alcool. Pendant la leçon précédente nous avons appris que l'air se dilate lorsqu'on le chauffe, ainsi une partie de l'air sortira du matelas. Par conséquent il y aura moins d'air dans le matelas qu'auparavant. Afin que l'air n'y rentre pas à nouveau quand il se refroidira, nous remettons le bouchon en place. Que pensez-vous, mes enfants: les deux plateaux resteront-ils en équilibre ou l'un d'eux descendra-t-il? Ayant écouté les élèves, l'instituteur accompagna l'expérience de questions. Les enfants purent se convaincre que le matelas, dont on avait éloigné une partie de l'air, était devenu plus léger; ce qui démontre que l'air a un poids.

Si la leçon s'était limitée à communiquer aux élèves les conclusions de la science, deux phrases y auraient amplement suffi:

– "Enfants, sachez que l'air, comme d'ailleurs tous les autres corps de la nature, a un poids. 1 m^3 d'air pèse 1 kg 293 g".

Les enfants auraient répété plusieurs fois ces phrases, ils s'en seraient souvenus, puis ils les auraient reproduites. Une telle communication des connaissances n'aurait exigé des enfants qu'un appel à la mémoire, mais ne leur aurait pas offert l'occasion de développer un processus intellectuel.

Mais l'instituteur a agi autrement: au début même de la leçon, il posa un problème aux enfants en les plaçant devant une contradiction: tous les corps solides et liquides ont un poids que nous pouvons peser dans la main. Par contre nous ne sentons pas le poids de l'air. Peut-être, l'air ne pèse-t-il rien?

Un tel exposé du matériel d'étude sous forme de problème a non seulement assuré la preuve scientifique et l'assimilation consciencieuse des connaissances, mais a aussi contribué à accroître l'intérêt et à stimuler la faculté de penser des enfants, il les a contraints à suivre le cours de la pensée de l'instituteur, comme s'ils raisonnaient avec lui. C'est sous la forme de problèmes qu'il faut évaluer la valeur pédagogique de l'exposé des connaissances.

En commun avec les psychologues, les pédagogues soviétiques effectuent des recherches visant à expliquer les sources des problèmes et les moyens de les inclure dans le processus des études. Dans un cas, le problème apparaît chez les élèves, même durant leur activité vitale, lorsqu'ils se heurtent à des phénomènes incompréhensibles de la nature, de la technique, de la vie sociale. Etant constamment en contact avec les enfants, écoutant attentivement les questions qui se posent à ces enfants pendant l'étude de chaque thème du programme scolaire, l'instituteur utilise ces questions, pour créer des problèmes au cours des leçons, pour exposer les connaissances sous forme de problème ou pour organiser des recherches collectives.

Dans d'autres cas, l'instituteur montre lui-même pendant la leçon un phénomène quelconque ou parle de faits qui sont en contradiction avec les connaissances des enfants. Cette contradiction donne naissance à un problème que l'instituteur utilise comme élément initial pour l'exposé ultérieur des connaissances.

Dans l'exposé des connaissances sous forme de problème qui a été décrit plus haut, l'instituteur a posé lui-même le problème aux élèves et l'a lui-même résolu, montrant aux enfants un exemple d'activité de recherches. Mais les écoliers n'ont pu, en observant le processus des recherches, acquérir la méthode d'un travail scientifique. Il est indispensable de leur donner la possibilité de résoudre eux-mêmes des problèmes de perception, ceci dans la mesure de leurs moyens. Voilà pourquoi, lors de l'exposé d'une leçon, l'instituteur doit de temps en temps poser à la classe des questions qui incitent les écoliers à effectuer eux-mêmes des recherches et à résoudre seuls tel ou tel autre problème de perception: par exemple, exprimer une hypothèse, expliquer un fait, prouver qu'une pensée est juste ou fausse au moyen d'une simple expérience ou raisonnement, aboutir à une déduction à la suite de l'expérience réalisée par l'instituteur etc. Etant donné que le problème posé est, pour l'essentiel, résolu par l'instituteur et que les élèves ne participent que partiellement aux recherches, on pourrait intituler cette méthode "méthode aux recherches partielles". Elle est largement appliquée dans l'enseignement de toutes les disciplines scolaires.

A l'heure actuelle, les pédagogues et les psychologues soviétiques effectuent en commun des recherches dont le but est de déterminer les types de recherches qu'il convient d'inclure dans le processus de l'enseignement.

L'étude de ces problèmes appliqués aux sciences humaines, étude effectuée par le laboratoire de didactique de l'enseignement des sciences humaines de l'Institut de l'instruction générale et polytechnique de l'Académie des sciences pédagogiques de l'URSS sous la direction de I. Lerner, présente un intérêt particulier. L'auteur estime que la fonction essentielle des problèmes de perception en histoire est d'apprendre à la jeune génération à penser d'une manière indépendante et à résoudre les problèmes sociaux qui apparaissent dans la vie, dans le travail, et au cours des contacts avec les gens. On y arrive par l'enseignement à l'aide de problèmes déjà résolus par la science historique et les sciences sociales incluses dans le cours de sociologie.

Un des buts que poursuit l'enseignement de l'histoire est de porter à la connaissance des enfants les méthodes de la science. Ces méthodes sont indispensables pour pouvoir résoudre indépendamment les problèmes qui se posent dans l'enseignement de l'histoire, ainsi que plus tard dans une activité pratique. Dix types de problèmes de perception ont été placés par les chercheurs à la base de l'analyse des méthodes de la science historique. S'y rapportent, par exemple, les problèmes de l'application de la méthode comparative et historique, la méthode de l'analogie, la méthode statistique, la détermination des causes en fonction des conséquences, la détermination de l'origine du phénomène en vertu de ses formes ultérieures, etc.

Des recherches analogues sont effectuées par des méthodologistes soviétiques dans d'autres disciplines scolaires notamment en mathématiques, en physique, en dessin technique et industriel, en chimie, en biologie, en géographie, etc. Les problèmes de perception et de recherches sont de plus en plus appliqués dans l'enseignement polytechnique et professionnel.

Au fur et à mesure que les élèves acquièrent les méthodes de la pensée scientifique, il leur devient possible de résoudre des problèmes de perception de plus en plus compliqués et, enfin, leur développement mental atteint un niveau qui leur permet de réaliser indépendamment toutes les étapes de la recherche, depuis la début jusqu'à la fin, dans une continuité logique. Ayant compris le problème posé, les élèves élaborent eux-mêmes le plan des recherches, formulent des hypothèses, réfléchissent au moyen de les vérifier, effectuent des observations, des expériences, décrirent les phénomènes observés, comparent, classent, généralisent les faits, prouvent et aboutissent à des conclusions. Cette méthode d'enseignement a reçu en didactique le nom de "méthode de recherches". L'activité de perception des écoliers se rapproche, par son caractère et sa structure, des recherches du savant qui découvre de nouvelles théories scientifiques. Il est vrai que les faits découverts par les élèves pendant leurs études ne sont pas nouveaux pour la science, mais ils le sont pour les élèves eux-mêmes.

E. Maloletkova, professeur de chimie à l'école No. 174 de Moscou, organise d'intéressants travaux de recherches pour les élèves qui résolvent des problèmes lors d'expériences chimiques en classe, pendant les travaux extra-scolaires, pendant les excursions et chez eux. De nombreux problèmes sont élaborés sur la base d'une matériel de production et servent de moyens efficaces pour lier le cours de chimie à la vie. Nous citons un extrait de l'article de E. Maloletkova donnant une idée de cette intéressante expérience.

> "En classe de 7e, tout commence avec les devoirs à domicile. Pendant l'année, les élèves doivent résoudre au maximum 3–4 problèmes. Déjà, à ce stade, les problèmes ont un caractère de recherche. Par exemple: Obtenir de l'oxyde de cuivre au moyen de la réaction de combinaisons et expliquer quelles conditions conduisent à cette réaction ou étudier les conditions qui provoquent la création de gros cristaux.

Les enfants écrivent un rapport pour chacun de ces problèmes. Ils le font toujours avec enthousiasme et intérêt.

Deux fois par an, les élèves des classes de neuvième et de dixième résolvent des problèmes expérimentaux en dehors des leçons. Ils ont la possibilité d'utiliser les laboratoires chimiques des usines et des instituts. Je leur permets de choisir entre 15 à 20 problèmes en tenant compte des intérêts et de la préparation des enfants. Deux ou trois écoliers résolvent ensemble les problèmes difficiles. Ils disposent pour cela de trois mois. Dès que l'élève a élaboré le plan de travail et déterminé l'expérience qu'il effectuera, je vérifie si la voie choisie, est juste et, après avoir eu un entretien avec lui, je juge s'il est prêt ou non pour entreprendre l'expérience.

Lorsque les problèmes sont vérifiés, les élèves préparent une rencontre au cours de laquelle ils examinent les solutions les plus intéressantes et les plus originales des problèmes. . ."

Comme on peut le constater par ces exemples, la méthode des recherches est le plus largement appliquée dans les travaux extra-scolaires. On procède également à son application sur une grande échelle pendant les leçons. Il en a été ainsi avec les expériences agricoles: au début, seuls les jeunes naturalistes les effectuaient pendant les travaux extra-scolaires. Aujoud'hui, les travaux d'expérimentation on été inclus dans le programme d'apprentissage obligatoire pour tous. Il est probable qu'un processus analogue se réalisera dans les autres types de recherches extra-scolaires. De plus, cette tendance est caractéristique non seulement pour les sciences naturelles et mathématiques, mais aussi pour les sciences humaines.

Nous avons dit plus haut qu'au cours des travaux de recherches, les écoliers découvrent des vérités nouvelles pour eux, mais pas pour la science. Cependant, au cours de ces dernières années, on remarque d'une manière de plus en plus évidente la tendance à faire participer des écoliers à des recherches sortant du cadre des études scolaires et acquérant une valeur de science appliquée. Ainsi, de nombreuses expériences agricoles prévues au programme de l'apprentissage sont effectuées par les élèves à la demande des kolkhozes et sovkhozes, des stations d'essais agricoles ou des instituts scientifiques. Les résultats de ces essais sont appliqués dans la pratique de la production agricole.

Citons quelques types de travaux de recherches auxquels participent les élèves de nombreuses écoles rurales: observations météorologiques et phénoménologiques; étude de caractéristiques agricoles locales; réalisation d'essais agricoles; étude des espèces, de la diffusion et de la migration des parasites des champs et des mesures protectrices; étude chimique et physique du sol; rationalisation et invention dans le domaine de la technique agricole; recherches sociales et économiques.

Le sens pratique et social des travaux expérimentaux des élèves caractérise l'école soviétique.

Soulignant la valeur pédagogique de l'acquisition des connaissances par la solution de problèmes et l'application de la méthode des recherches, la pédagogie soviétique ne les universalise pas et ne les oppose pas à l'exposé ordinaire et systématique des déductions scientifiques. Il n'est pas question d'universaliser une méthode, mais de combiner harmonieusement diverses méthodes dont chacune est appelée à résoudre des problèmes spécifiques. L'acquisition des connaissances par l'information permet de transmettre rapidement les résultats de l'expérience d'une génération à une autre. Mais elle développe insuffisamment chez l'élève une manière de penser indépendante et créatrice. L'acquisition des connaissances sous forme de problème et la réalisation par les élèves de travaux indépendants de recherches exigent généralement un temps plus long, qui trouve sa justification dans ce que ces méthodes contribuent au développement chez l'élève d'une manière de penser indépendante et créatrice, elles rehaussent leur intérêt pour la science et leur donne des connaissances plus approfondies et plus durables.

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FOSTERING OF PUPILS INDEPENDENT THOUGHT AND LEARNING ACTIVITY: THE EXAMPLE OF THE SOVIET SCHOOL

by MIKHAIL SKATKIN, Moscow

Mechanisation and the dynamic developments taking place in science are presenting the schools with new problems. Their task is to awaken in people a thirst for further education and to enable them to gain new knowledge for themselves and to make the best creative use of this.

The Soviet schools have been concerned with this task since their foundation, even if at first their efforts were not entirely free from mistakes The value of systematic learning was underestimated when first developing the Soviet school system. Later, pupils were trained to think for themselves and were encouraged in creative activities through verbal, visual and practical methods of instruction.

Psychological research has shown that a problem situation always exists at the beginning of each thought process. Every thought process produces a solution to a theoretical or practical task. Teachers attempt to start from this theoretical basis when creating learning situations. However, at the same time the systematic structure of the instruction is maintained, i.e, it is built up on didactic and logico-scientific criteria. It is in this way that the main difference exists between the Soviet conception of problem-oriented instruction and other comparable didactic conceptions.

The teacher does not confine himself in his teaching – in contrast to the usual sheer presentation of information – to facts, but shows the way in which they were discovered. (This process is illustrated by an example of geography teaching in the 4th school year.)

Soviet educators are collaborating with psychologists in research into the causes of the "problem situation", in order to make use of it in teaching. A systematic construction of courses and the leading role of the teacher in the teaching process must, however, be maintained in problem-oriented instruction.

The pupils are encouraged by the teacher to discover solutions to the specific (partial) problems which arise during class and to substantiate the solutions. This method is widely used in teaching. It is called the method of "partial research". of these forms of discovery situations.

Of particular interest in this connection is a study which has been carried out in the Institute for General and Polytechnic Education of the APN in the USSR, under the direction of I. J. Lerner, which is concerned with research into these problems Soviet educators and psychologists are attempting at present to prepare a typology in the area of humanities.

Pupils are supposed, for example, to think through, and learn to solve social problems within the framework of history instruction. One of the aims of history instruction consists of learning the methodology of history. Similar research is being carried out in other subjects.

The pupils are ultimately expected to master the methods of scientific thought and to be able to carry out independent research according to a logically self-constructed plan. This method is known in didactics as the research method. (This is illustrated by an example of chemistry instruction in classes 7–10).

The research method is also used in polytechnic teaching and in extra-curricular

activities. Here it has already led to new scientific knowledge – particularly in the field of agriculture – which is being put to practical use.

Problem-oriented instruction and the research method are not intended to replace the traditional presentation of information. The latter enables a faster imparting of information about proven scientific knowledge, but tends to develop independent thought to only an insufficient extent. It is not important for Soviet schools to impose any one particular method, but rather to bring about a harmonious interaction of different methods of instruction.

Problem-oriented instruction and the research method require a greater expenditure of time, but this pays off, since through this, pupils' independent thought is developed, their interest in science is increased, and a deeper and more firmly-based knowledge is imparted.

FÖRDERUNG DES SELBSTÄNDIGEN DENKENS UND DER LERNAKTIVITÄT VON SCHÜLERN: DAS BEISPIEL DER SOWJETISCHEN SCHULE

von MIKHAIL SKATKIN, Moskau

Die Mechanisierung der Arbeit und die stürmische Entwicklung der Wissenschaft stellen die Schule vor neue Aufgaben. Sie soll im Menschen das Bedürfnis nach Weiterbildung wecken und ihn befähigen, selbständig neues Wissen zu erwerben und es schöpferisch anzuwenden.

Die sowjetische Schule bemüht sich seit ihrer Gründung um diese Aufgabe, wenn diese Bemühungen anfangs auch nicht frei von Fehlern waren. Man unterschätzte zu Beginn der Schulenentwicklung den Wert der systematischen Kenntnisse. Später begann man, die Schüler zum selbständigen Denken und zur schöpferischen Aktivität durch verbale, anschauliche und praktische Unterrichtsmethoden zu erziehen.

Die psychologischen Forschungen haben gezeigt, daß am Anfang des Denkens stets eine Problemsituation steht. Jegliche Denktätigkeit stellt die Lösung einer theoretischen oder praktischen Aufgabe dar. Von dieser theoretischen Grundlage ausgehend bemühen sich die Lehrer, im Unterricht Problemsituationen zu erzeugen. Dabei bleibt jedoch der systematische Charakter des Unterrichts gewahrt, d.h. er wird nach didaktischen und wissenschaftslogischen Kriterien aufgebaut. Darin besteht der prinzipielle Unterschied der sowjetischen Konzeption des problemorientierten Unterrichts zu den vergleichbaren didaktischen Konzeptionen,

Der Lehrer beschränkt sich dabei im Unterricht – im Unterschied zu der üblichen informierenden Darbietung – nicht auf die Mitteilung fertiger Wahrheiten, sondern zeigt den Weg, der zu ihrer Entdeckung geführt hat. (Dieses Verfahren wird an einem konstruierten Beispiel des Naturkundeunterrichts im 4. Schuljahr erläutert).

Die sowjetischen Pädagogen bemühen sich gemeinsam mit den Psychologen, die Entstehung der Problemsituationen zu erforschen, um sie im Unterricht zu nutzen. Der systematische Aufbau des Kurses und die führende Rolle des Lehrers im Unterrichtsprozeß müssen jedoch im problemorientierten Unterricht gewahrt bleiben.

Die Schüler werden vom Lehrer angehalten, nach Lösungen für die im Unterricht auftretenden Teilprobleme zu suchen und diese zu begründen. Diese Methode findet im Unterricht breite Anwendung. Man bezeichnet sie als die Methode des partiellen Suchens. Die sowjetischen Pädagogen und Psychologen bemühen sich z. Zt. darum, eine Typologie der Formen dieses Suchens zu erarbeiten.

Von besonderem Interesse ist in diesem Zusammenhang die im Institut für allgemeine und polytechnische Bildung der APN der UdSSR unter der Leitung von I. J. Lerner durchgeführte Untersuchung, die sich mit der Erforschung dieser Probleme im Bereich der geisteswissenschaftlichen Fächer befaßt.

Die Schüler sollen z.B. im Rahmen des Geschichtsunterrichts gesellschaftliche Probleme durchdenken und lösen lernen. Ein Teilziel des Geschichtsunterrichts besteht darin, die Methoden der Geschichtswissenschaft kennenzulernen. Ähnliche Forschungen werden auch auf den Gebieten anderer Unterrichtsfächer durchgeführt.

Die Schüler sollen am Ende die Methoden des wissenschaftlichen Denkens beherrschen und selbständig nach einem logisch aufgebauten und von ihnen selbst kontrollierten Plan forschen können. Diese Methode ist in der Didaktik als die Forschungsmethode bekannt. (Sie wird am Beispiel des Chemieunterrichts in den Klassen 7 bis 10 erläutert).

Die Forschungsmethode findet auch im polytechnischen Unterricht und in der Jugendarbeit außerhalb des Klassenunterrichts Verwendung. Hier hat sie – vor allem auf dem Gebiet der Landwirtschaft – bereits zu neuen wissenschaftlichen Erkentnissen geführt, die in der Praxis angewendet werden.

Die problemorientierte Vermittlung des Wissens und die Forschungsmethode werden der informierenden Darbietung des Wissens nicht entgegengesetzt. Die letztere ermöglicht eine schnellere Information über die gesicherten wissenschaftlichen Erkenntnisse, entwickelt jedoch das selbständige Denken nur ungenügend. Der sowjetischen Schule geht es nicht um die Verabsolutierung irgendeiner Methode, sondern um das harmonische Zusammenwirken verschiedener Unterrichtsmethoden.

Die problemorientierte Wissensvermittlung und die Forschungsmethode erfordern einen größeren Zeitaufwand, der sich jedoch bezahlt macht, weil dabei das selbständige Denken der Schüler entwickelt, ihr Interesse an der Wissenschaft erhöht sowie tieferes und festeres Wissen vermittelt wird.

HEURISTIC LEARNING AND PROGRAMMED LEARNING

by Wincenty Okoń, Warsaw

Introduction

We must first explain the terms used in this article. By "traditional learning" we mean a learning process based on Herbart's formal steps, with heteronomous factors, independent of its past or present existence, playing a special rôle. "Progressive learning", worked out by Dewey, Decroly and Freinet, advocates early autonomy of the child and treats him according to Leo Tolstoy's maxim as "an archetype of harmony and perfection." Next, the modern school, represented among others by the socialist school, aims to fuse harmonious cognition with action, heteronomy with autonomy, and the interest of the individual with that of society. The terms "heuristic" or "problem" learning, which will be

used interchangeably, mean learning based on the independent solution of practical or theoretical problems by a learner. "Programmed learning" is a method of acquiring knowledge by means of a text programmed according to the linear, branched or combined method.

All the above terms may be analysed according to their relation to the concept of thinking and to the rôle of thinking in the process of learning. In traditional learning the passive acquisition of new material prevails, followed by its memorization. Learning according to Herbart's directions was evaluated by John Dewey thus: thinking is treated as incidental to the process of acquiring knowledge, while the opposite approach treats the acquisition of knowledge as incidental to the process of developing thinking. Dewey, the outstanding representative of pedagogical progressivism, stated his views on the question of the relation between progressive learning and thinking in his book *How We Think*,1) which became a sort of Bible for teachers all over the world. His progressive movement, called "new education", was apparent in many pedagogical trends and reached the highest level of its development in the school of Celestyn Freinet, where so-called techniques surpass thinking. Here, thinking has in practice become much more intensified than in Dewey's system.

In socialist schools the attitude towards thinking has undergone further refinement as a result of pedagogical, psychological and physiological research. Improvement may also be observed in other countries, without regard to their political system. There is no doubt that thinking belongs to the most complicated and the least studied of psychological processes. One should take into account the attitude – widely spread by materialists – which regards man as a part of the universe, with which he has manifold relations and interdependence. If these relations were of a chaotic nature and did not depend on man, he would not have been able to exist for long. This chaos is prevented by the human nature of man, starting with metabolism and ending with thinking. Thus all these processes may be understood in depth only when one recognises their function as regulators in the mutual relation between man and the universe. The same applies to actions and psychological processes, since the psychological behaviour of man is the result of a mental process which reflects the outer world. "Psychological activity of the brain is simultaneous with the reflection of the outer world because the operation performed by the brain is of an impulsive nature and is conditioned by the reaction to the outer world."2)

Our environment comprises objects such as minerals, plants, animals, tools, machines, buildings and pictures, which have manifold properties connected with the fulfilment of human needs. These properties are revealed in the course of the reactions between man and his universe. They are also reflected in our observations when they perform given functions in the course of our experience. The sensory cognition thus gained is the starting point for intellectual cognition, also called abstract cognition. Sensory cognition is achieved by means of the senses, while abstract cognition is the result of our thinking. No abstract cognition is possible without sensory cognition. This is true [3]) not only in the sense that theoretical thinking is based on empirical data in its final stage, and achieves its most abstract form as a result of more or less profound analysis of the data supplied by the senses, but also in the deeper sense that any sensory content, even the smallest, is inherent in abstract meaning.

The definition of thinking as the cognitive action of a subject means that thinking, as a reflection of being, is at the same time the action of a man who recognizes being. When this is applied at the school level, it means that unless the pupil's activity is directed towards cognition of environment, not only is thinking impossible, but also cognition of the environment. It seems obvious that this statement completely undermines the value of traditional learning which separates a pupil from his surrounding environment, leaving him only words.

The thinking activity of a pupil depends on the discovery of the basic properties of things and phenomena, and simultaneously in abstracting from them minor and secondary properties. It usually occurs in school situations when a pupil tries to solve a given problem-oriented exercise by himself.

But exercise of the learning process does not always involve problems; many psychologists following Selz distinguish two kinds of thinking; productive and reproductive. The first deals with generating new information. The second deals with the reproduction and utilization of acquired information. Thus it may be said that in the process of traditional learning, reproductive thinking is dominant, while in progressive learning productive thinking prevails. The latter, however, is in practice confined mainly to the generation of information; in the modern school both reproductive and productive thinking based on solving practical and theoretical problems are utilized.

Of What Does Heuristic Learning Consist?

We may now consider some specific features of heuristic thinking and learning. By heuristic thinking we mean the thinking which occurs in the process of problem-solving. This process has been a matter of interest for many methodologists and psychologists, who have tried to distinguish its main phases. In the above-mentioned work 4) Dewey differentiates five phases:

1. A sense of difficulty
2. Discovering and defining it
3. Determination of a possible solution
4. Drawing conclusions from the possible solution
5. Observing and verifying it.

Other authors, e.g., D. H. Johnson, S. Gray, D. O. Hebb and P. R. Merrifield have presented rather different conceptions but the simplest and at the same time the most instructive classification is worked out by Hebb 5), who has divided the process of problem-solving into two phases:

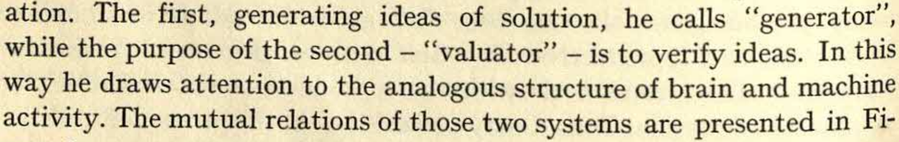
1. Discovering new ideas
2. Verifying the ideas, checking and ordering them.

According to Hebb's classification, two processes are differentiated in heuristic thinking. First, the generation of ideas. The term "idea" is synonymous here with "hypothesis". Second, the correction or verification of solutions. The latter is often defined as decision-making.

Generating ideas and verifying them are two separate thinking processes which require different intellectual capacities. Even in the process of generating ideas there are specific differences between making discoveries and inventions. The ablilities required for solving the practical problems which result in invention are different from those needed for solving the theoretical problems which underlie discovery.

Assuming a distinction between the processes of generating and verifying ideas, a Polish psychologist 6) has implied that man possesses two relatively different thinking systems which function in a problem situation. The first, generating ideas of solution, he calls "generator", while the purpose of the second – "valuator" – is to verify ideas. In this way he draws attention to the analogous structure of brain and machine activity. The mutual relations of those two systems are presented in Figure 1.

Fig. 1. *A Block Outline of the Basic Thinking System.* 7)



We must add that this scheme is but part of an extensive system which operates in man. For instance, another Polish psychologist 7) distinguishes the motive system and the orientative or cognitive system of which the phase of generation and verification is but a component.

Generation of ideas for the solution to a problem has only recently become the subject of analysis by psychologists and educators. It is a heuristic process because heuristic rules are used. In contrast to heuristic rules there are algorithmic rules, in which algorithms serve as directions. Because on the one hand heuristic processes are dominant in the course of heuristic learning, and on the other, algorithmic processes prevail in programmed learning, both now need discussion.

The term "heuristic" recalls the old and stale method of heuristics. It comes from the Greek word *εὐϱίτϰειν* and means "serching to find out". In school, heuristic learning has been introduced by means of questions asked by the teacher and answered by pupils. It was assumed that answers should include some independent thinking, but most of the teachers neglected that condition.

In discussing the didactic problem we have in mind practical or theoretical difficulties which are resolved as a result of the pupil's own inquisitive activity.[8]) In addition, the following problems may be differentiated: convergent – dealing with solving difficulties in theory; and divergent - dealing with difficulties in practice. The former occur in learning such subjects as mathematics, physics, chemistry or biology and usually have only one solution. The latter appear when learning liberal arts, and technical and artistic subjects, but the number of solutions remain unlimited. In as far as convergent problems lead to discoveries, so divergent problems concern inventions and some other creative, practical activities. The term "heuristic thinking" is used in a similar, narrow sense in psychology at present. Attempst are also made to verbalize the heuristic rules which facilitate the generation of ideas. These rules may be either general or particular. In learning, general rules are valid for all subjects, while particular rules facilitate the generation of ideas solely in chosen subjects or fields. An example of such a rule was given by W.I.B. Beveridge. [9]) He says that when solving a problem one should not patronize one's own hypothesis.

One of the characteristic features of heuristic rules is their lack of certainty, because even the best of them does not guarantee the solution of a problem. Their incomplete determination means that they are not so strict as algorithms. It is worthwhile to notice that experts constructing programmes of artificial intelligence create rules which from the point of view of precision resemble algorithms. However, it seems that such precision can never be achieved at school because of the insufficient maturity of primary and secondary school pupils.

An algorithm is a straightforward rule defining the finite sequence of operations necessary to solve all the problems of a given class.10) Here is an example of the most simple, mathematical algorithm, the so-called Euclidean algorithm which makes possible the discovery of the greatest common divisor of any two natural numbers "a" and "b".11)

Operation 1. Take any two numbers "a" and "b".
Operation 2. Check the relation between those two numbers, whether "a"="b"; or $a > b$; or $a < b$.
Operation 3. If the numbers are equal, the operation ends; if they are not, proceed to operation number 4.
Operation 4. If the first number is smaller than the second one reverse their order.
Operation 5. Take the second number from the first and analyse those two numbers; subtract and find the difference. Return to operation number 2.

After completing the above five operations, repeat from operation number 2 often enough to get two equal numbers. This algorithm, though simple, is straightforward, because it always gives the solution to each problem of a given class. At the same time it is strictly defined and does not allow a subjective interpretation. These two features of the algorithm are of considerable value in programmed learning.

The use of algorithms may provide automatic solutions to problems to such an extent that they may be done by a machine, e.g. a computer. This process is not always successful in providing solutions to problems, therefore it sometimes seems more economical to apply heuristic rules rather than algorithmic rules. Moreover, the process of deriving a new algorithm is rather slow. In the course of derivation, the number of creative problems needing solutions decreases, but they are replaced by new ones.

Heuristic Learning as the Generation of Ideas

Any problem consists of elements which are known or given (data), and those which are unknown.12) The clue for a solution is the discovery of the unknown elements. In other words, the problem may be presented as a structure of incomplete data.13) A pupil trying to solve the problem mentally grasps the whole structure, and then finds the unknown elements or unknown relations between given elements and in this way completes the structure. This whole process requires intense activity by pupils and an all-round approach to the problem to be solved.

The situation looks different in programmed learning, where although the steps are smaller, the disintegration of knowledge in the learner's consciousness is more intensified. In school, the generation of ideas takes place mostly during lessons of a specific type, different from Herbart's type. The starting point of such a lesson is the creation of a problem situation by means of certain motivation, or by causing a positive motivation which absorbs the attention of the pupils and causes them to overcome difficulties. Such effort is indispensable when looking for the clues for a solution. Such a situation provides a background for the problems which may be suggested by a teacher, but it is very advisable to encourage pupils to act on their own. In the latter case, the pupils' interest is increased.

In the process of heuristic learning a pupil's thought is directed.14) The process consists mainly of looking for one hypothesis, or a group of them, coupled with free choice of the direction of search in a given problem situation.

The extent of arbitrary choice depends on the type of problem. When solving convergent problems, the extent of arbitrary choice is small; for most of these problems have but one solution towards which only one way leads, or at most a few. A well known example may serve here as an illustration: the mathematical problem which consists of placing six separate matches to get four identical triangles, the sides of which are equal to the length of one match. Only two directions of search are possible: combination in a plane or in three dimensions. A pupil who is used to considering triangles as plane figures has difficulties with the other possibility. This one-sided disposition limits his already small free choice. In divergent problems the extent of free choice is large, but here also, as was proved by analysis15) attitudes conditioned by the experience of the learner play a part.

One of the most often used heuristic rules concerns the direction of search. It leads to the choice of those directions of search which in past experience were most likely to lead towards the final solution in a given type of problem situation. Certainly, when a pupil follows the same rules in new situations, apparently belonging to a previously known type, he goes astray. This is partly connected with the explanation of so-called sudden discoveries or "insight". These sudden discoveries occur unexpectedly often at a time when the person solving a given problem has ceased to give his attention to it. They are explained by the incubation theory, according to which the sudden advent of an idea is preceded by unconscious activity of the brain. Other authors (and this is of considerable importance for us) state that the advent of an idea some time after stopping work on a problem is connected with extinguishing the mistaken attitude. Others further report that intuition should be considered,[16]) but this does not seem to be either an obvious or a cogent argument. We may assume that the process of creating a hypothesis does not have to be the result of insight, although this should also be taken into consideration. Many steps are taken systematically by a pupil who uses a logical operation such as analysis and synthesis and logical argumentation. Because of the important part they play in heuristic learning we should pay more attention to them.

Analysis and synthesis are important in the process of creating ideas. Analysis deals with the break-down of particular information or systems into separate parts and at the same time with the isolation of those elements which are necessary in constructing the hypothesis from the data available. Synthesis consists of joining together information and building hypothetical new structures, or a combination of them, from the data.

Both in the process of creating hypotheses and their verification, argumentation plays an important part. The process of argumentation or deduction is of great value at school, where sudden discoveries are rather rare; most subjects with which a pupil has to deal make such discoveries unlikely. Therefore the processes of argumentation play an essential rôle, and pupils learn how to deal straightforwardly and systematically to get at the truth.

Deductive or reductive argumentation are the types most frequently used by logicians.[17]) Deductive argumentation comprises deduction and verification; reductive argumentation consists of explanation and proof. Deductive argumentation goes from argument to sequence, and reductive from sequence to argument.

Heuristic Learning as Verification of Ideas

The creation of ideas for solving a problem involves two particular abilities in the pupil. The first is the ability to observe a problem, also called sensitivity to a problem. It is indispensable in realizing the difficulties and omissions in a problem situation. People have this ability to varying degrees, but when properly developed it helps to achieve good results. The ability of argumentation, previously mentioned, is of considerable value both in the process of generating ideas and in verification, while the ability to observe problems is of great importance only in the process of generating ideas. In the process of verification, the ability to appreciate is involved, but it has still not been examined. Verification means appreciation and choice of ideas of solution. Appreciation may be of a logical or an experimental nature depending on the sort of problem and on the learner's capability. The method of verification is conditioned by the nature of the problem, and considerable differences may be noticed in the method of verification of ideas such as "discover" and "make".

Much experimental research carried out in Poland and other countries has proved that the process of learning greatly influences the development of the ability to solve problems. Polish research on problem learning has affirmed its advantage in acquiring knowledge and ability.18) 19) The results of groups which used the problem method were better than those which applied traditional methods of learning.

Knowledge achieved by one's own effort is effectively memorised thanks to logical retention and a tendency to structural apprehension of the material. The use of apprehended material with regard to a problem increases because it becomes subject to the learner's activity when solving theoretical or practical problems.

The Process of Programmed Learning

The development of heuristic learning has been accompanied by the development of programmed learning, notably in the U.S.A., during the last ten years. According to the opinions of some pedagogues the problems of automation are becoming prominent.20) 21) Great interest in these two methods of learning therefore seems understandable.

We have22) pointed to the convergence which exists between programmed and traditional learning based on Herbart's formal steps. Herbart differentiated four steps in any learning process: clarity, association, system and method. Similarly, the material for programmed learning is divided into steps which recall the Herbartian clearness factor. After understanding each successive step a pupil has to perform a given exercise: this involves the association of previous experience in order to choose a correct answer according to the Pressey or Crowder method, or to fill a blank space in an exercise according to Skinner. If the answer in the first exercise was wrong, the pupil has to repeat the same exercise until he gets the right answer, the proper association. The apprehension of the successive steps serves to assure the acquisition of the system of knowledge by the pupil. The author of the programme was responsible for the systemization of the particular steps and for placing emphasis on the most important points. The method as such may be an element of the programme, if in a given group of successive exercises, a pupil has to show his ability to use definite information, or may go beyond the programme of learning.

Besides the above similarities there are clear differences between these two methods of learning. The main difference is the programme itself, being a very precise process of selecting the information provided in the programme and the answers expected from the pupil; traditional learning lacks this property. Hence in a programmed, didactic process, the possibility of gaps and unexpected difficulties decreases. When using the programmed text a learner has to overcome all the difficulties in order to go forward. The other important difference lies in the fact that the speed of programmed learning is adjusted to the individual needs of the learner, while in traditional learning the speed is the same for all. In programmed learning constant checking and intensification of the didactic activity of a learner takes place and seems to be an important virtue. The differences enumerated here make programmed learning more efficient from the didactic point of view, in comparison with traditional learning, as has been proved by research. 23) 24)

It is more difficult to define the similarities and differences between programmed and heuristic learning. In the present state of psychological and educational knowledge the problem cannot be fully defined.

One of the basic differences has already been discussed: that is, the basing of heuristic learning on heuristic rules, while programmed learning is based on algorithms. This means that in problem learning a pupil is allowed to choose the ideas for solution as well as ways of verification, and often he is even free to formulate the problem. On the other hand in programmed learning a pupil is led by algorithm, a rule of procedure made by somebody else. The rule makes him do given operations in a given order to get the final solution. So in the first case we deal with creative learning, recalling the process of scientific research,25) and in the second with automatic learning involving the pupil's mind and his attention only from one step to the next. The particular steps contain very small pieces of information in Skinner's method, and not much greater in Crowder's.

On Fictitious Similarities between Heuristic and Programmed Learning

It is possible to find an analogy between heuristic and programmed learning, but it is a fictitious one. Psychologists working on the structure of the process of generation and verification of ideas differentiate three kinds of structures: linear, cyclic and branched. It is easy to notice the resemblance to kinds of programming such as linear, branched and mixed. Linear structures in problem learning are the simplest. They are composed of the following steps: s_1, s_2, s_3... s_n, each of which is done only once. The structure of a problem lesson 26) may serve as an example of such linearity. Such a lesson consists of the following actions performed by teacher and pupils:

a) Arranging the problem situation
b) formulating one or more problems
c) distinguishing the possible components of a hypothesis
d) verification of hypothesis and comparing the results of different groups in the class
e) systematization and memorization
f) applying new information in new practical and theoretical situations.

Programmed learning based on linear methods is similar, for it goes from one step to another. The nature of these simple actions depends on the use of a programmed handbook or on a computer. In the further analysis of steps in programmed learning, the essential differences between the two linear systems may be observed. The following is an example of part of a linear programme.[27])

	A doctor hits your knee with a rubber hammer to examine your	1 – 1
reaction	If your reactions are normal, then your leg ...... to the blow on your knee with a small jerk.	1 – 2
reacts	The jerk of your leg is a ..... to hitting the knee	1 – 3
reaction	The stimulus used by the doctor to get your knee to jerk was	

In the above programme each step consists of filling the gap with the proper word, and then checking whether the inserted word is the same as given by the programmed handbook or computer. All the successive steps are analogous from the point of view of procedure. In heuristic learning, each step is different from the previous one, which means that each requires different procedure. They, in turn, are not determined, but rather marked with a considerable measure of vagueness.

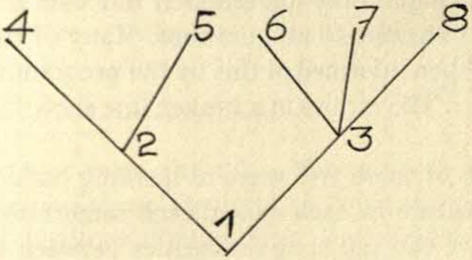


Fig. 2. *A Tree of Branched Structure*

This is analogous to a branched structure. The branched structure is most often represented by a diagram of a tree.[28]) Each point of the tree represents particular steps in the course of generating ideas, arrows mark the possible relations between steps. After having completed the 1st step a learner goes to the 2nd or 3rd according to the result achieved in the first step. If he has chosen step 2, he can do step 4 or 5, if he chose the 3rd step he can choose step 6, 7 or 8. He can perform further steps according to the results of the previous ones.

Programmed learning based on the branched method proceeds in a different way. It takes the form of reading given exercises and choosing the proper answer from several alternatives. Then comes the checking of the solution with the final results given in the programme and if it was wrong, frames should be used, that correct and explain why the solution has to be such and not otherwise. The graphic structure of these proceedings is represented in Figure 3.[29])

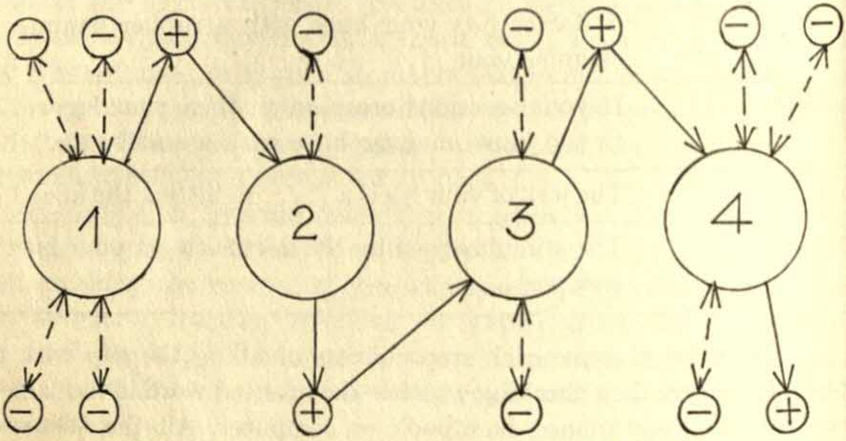


Fig. 3. *The Learner's Progress According to a Branched Programme*

Numbers 1, 2, 3, 4 in Figure 3 signify the quantity of information contained in the frames, and "pluses" or "minuses" signify correct or incorrect answers. The arrows in a continuous line show the shortest way of learning. All the pupils may undertake it but then they would be obliged to give correct answers to all questions. Many of them choose wrong answers, they are then informed of this by the programme and directed to the correct answers. The arrows in a broken line show the routes to wrong answers.

The comparison of those two ways of learning indicates the fact that the branched structure in each case means something else. By virtue of this comparison we can say that similarities between heuristic and programmed learning are fictitious but the presentation of superfluous similarities allows us to penetrate these methods of learning.

Conclusion

In conclusion we may tabulate the most important features of the particular didactic processes which we have already discussed; that is, learning as based on Herbart's steps, heuristic and programmed learning.

TABLE

Traditional instruction	Programmed learning	Problem learning
1. Teaching material is served in its final form; a teacher pays attention mainly to the programme and not to the pupils.	1. The teaching material is served in such a way as to make a pupil active; the pupil is the centre here.	1. New information is acquired by solving theoretical and practical problems.
2. During oral delivery or even when using text books there may appear gaps, obstacles and difficulties caused among other things by a temporary cut off from the process of learning.	2. The programmed material is such as not to have gaps and obstacles; to go further a pupil has to overcome all difficulties.	2. In the course of solving the problem a learner has to overcome all obstacles; his activity and independence reach their highest level.
3. The speed of delivery is adjusted to both good and weak pupils.	3. The speed of learning depends on the individual pupil.	3. The speed of learning depends on the individual pupil or group. The weak pupils have an opportunity to improve when working in the group.
4. The checking of results is partial and does not stand as inherent in the delivery of knowledge.	4. Complete checking of results is inherent in the course of learning. Without verification a pupil cannot go further.	4. Higher activity and increase of positive motivation of learning make the control smaller.
5. There is no possibility to assure good results for all, but knowledge acquired in this way is usually easier to apply when acquired in programmed learning.	5. Because of systematic checking, the effects of learning are greater than in the delivery, but the ability to use learning is not very high.	5. The effect of learning is great. Pupils get a lot of information, can easily apply it in new situations and at the same time develop their cognitive abilities and interests.

As can be deduced from the table, the methods discussed have advantages and disadvantages. However, it is generally admitted that the imperfections of traditional instruction are relatively larger than in other methods of learning; on the other hand, the advantages of heuristic learning are most manifold. One has to assume that each of the methods applied unilaterally may give undesirable results both for a group and for individual pupils for whom a particular method could be unsuitable. Therefore it seems reasonable to combine traditional methods with heuristic and programmed ones. The extent and limits of such combination depend on the level of the school, the subject and the pedagogic skill of the teacher.

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HEURISTISCHES LERNEN UND PROGRAMMIERTES LERNEN

von Wincenty Okoń, Warschau

Nach einer allgemeinen Begriffserläuterung charakterisiert der Verfasser das heuristische Lernen. Im heuristischen Denkprozeß unterscheidet er folgende zwei Phasen: die Phase der Aufstellung von Arbeitshypothesen und die Phase ihrer Verifizierung. Die Aufstellung von Hypothesen erfolgt auf Grund heuristischen Denkens, anders ausgedrückt, mittels allgemeiner oder spezieller heuristischer Denkregeln. Diese Regeln erleichtern die Aufstellung von Hypothesen, denn sie leiten die intellektuellen Bemühungen des Schülers. Ein Kennzeichen dieser Regeln ist jedoch, daß sie nicht sicher sind, denn sie garantieren weder die Lösung eines Problems, noch sind sie eindeutig definiert. Im Gegensatz zu den heuristischem Lernen zugrundeliegenden Regeln sind die Algorithmen, deren man sich beim programmierten Lernen bedient, sicher und klar definiert. Dank dieser beiden Eigenschaften automatisieren sie den Problemlöseprozeß. – Die Verifizierung der Hypothesen beschränkt sich darauf, Lösungsmöglichkeiten zu suchen und auszuprobieren. Evaluationsuntersuchungen können sich dabei der logischen Analyse oder empirischer Studien bedienen. Die Methoden der Evaluationsuntersuchungen hängen vor allem von der Art der zu lösenden Probleme ab. – Der Verfasser stellt neben den Unterschieden jedoch auch die Ähnlichkeiten zwischen heuristischem und programmiertem Lernen heraus und betont die auffällige Ähnlichkeit zwischen linear und verzweigt programmierten Texten. – Im letzten Teil seines Artikels vergleicht der Verfasser den herkömmlichen, an Herbarts Formalstufen ausgerichteten Unterricht mit einem auf programmierten und heuristischen Lernmethoden basierenden Unterricht.

L'ENSEIGNEMENT HEURISTIQUE ET L'ENSEIGNEMENT PROGRAMME

par Wincenty Okoń, Varsovie

Après avoir expliqué les notions générales, l'auteur caractérise l'enseignement heuristique. Dans le processus du raisonnement heuristique, il distingue les deux phases suivantes: la phase de la construction des hypothèses et celle de leur vérification. La construction des hypothèses est basée sur le raisonnement heuristique, autrement dit sur les règles heuristiques générales ou spécifiques. Ces règles facilitent la construction des hypothèses, parce qu'elles dirigent l'effort intellectuel de l'élève. Un des traits caractéristiques de ces règles est, qu'elles ne sont pas sûres, parce qu'elles ne garantissent pas la solution d'un problème et qu'elles ne sont pas pleinement définies. Contrairement à ces règles, les algorithmes, dont on se sert dans l'enseignement programmé, sont sûrs et parfaitement définis. Grâce à ces deux traits, les algorithmes automatisent le processus de la solution des problèmes. La vérification des hypothèses se réduit à évaluer et à choisir les concepts des solutions. L'évaluation peut être basée sur l'analyse logique ou sur les recherches empiriques. Les modes d'évaluation dépendent surtout du caractère des problèmes. L'auteur expose aussi les différences et les ressemblances entre l'enseignement heuristique et l'enseignement programmé, et attire en même temps l'attention des lecteurs sur les ressemblances apparentes qui existent entre les textes programmés ramifiés et linéaires. Dans la dernière partie de l'article, l'auteur compare les traits généraux de l'enseignement traditionnel, c'est-à-dire de l'enseignement basé sur la théorie des degrés formels d'Herbart, d'un côté, et de l'enseignement programmé et heuristique de l'autre.

GRUPPENDYNAMISCHE VERFAHREN ZUR OPTIMIERUNG DES LEHR- UND LERNPROZESSES

von Ernst Meyer, Heidelberg

Unter gruppendynamischen Verfahren verstehen wir alle Maßnahmen, die geeignet sind, einen Verband von Lernenden in eine *Gruppe* zu verwandeln, d.h. in einen *sozialen* Verband, der sich mit einer gemeinsamen Aufgabe auseinanderzusetzen hat. Diese Auseinandersetzung vollzieht sich in einem Interaktionsprozeß, bei dem das Verhalten des einzelnen durch die Aufgabe und die Wechselwirkung zwischen den einzelnen beeinflußt wird. Es handelt sich sowohl um Sozialisierungs- als auch gleichzeitig um Individualisierungsvorgänge, die dem Lernenden das Hineinwachsen in die Gesellschaft erleichtern und seiner Entwicklung, d.h. nach seinem eigenen Lerntempo, Leistungsniveau und Interesse zu arbeiten, förderlich sind.

Im Zusammenhang mit der angesprochenen Thematik wird folgenden Fragen nachgegangen:

- Wie lassen sich modellhaft Sozialisierung und Individualisierung und somit gruppendynamische Verfahren im Unterricht realisieren?
- Welche Wirkungen besitzt ein Unterrichtsmodell, das solche Verfahren anzielt?

Die Realisierung des optimalen Sozialisierungs- und Individualisierungsprozesses im Gruppenunterricht

Im pädagogischen Denken der Gegenwart wird allenthalben die Stellung des Menschen in der Polarität von Selbstsein und Mitsein gesehen. Es wird der Schule die Aufgabe zugewiesen, die Kinder und Jugendlichen in einen *Selbsterziehungs- und Selbstbildungsprozeß* zu führen, der im Umgang mit Sachen zugleich auch ein Umgang mit Menschen ist. Die Erziehungssituation des modernen Kindes, die bei der Realisierung dieses Ziels vom Lehrer mitgesehen werden muß, läßt deutlich einen radikalen *Wandel im Verhältnis des Heranwachsenden zu Umwelt und Wissen* (u.a. andersartige Wissensversorgung durch Massenkommunikationsmittel) und die immer *stärkere Betonung des Sozialen und Demokratischen* (*team-work*) in der Arbeitswelt, Autoritätswandel) erkennen. Die Forschungen der Pädagogischen Psychologie erhellen eindeutig Gesetzmäßigkeiten des individuellen Lernvorgangs, weisen darüber hinaus nach, daß in der Regel beim erzieherisch gelenkten Lernen in der Schule eine Korrelation besteht zwischen den Lernleistungen und der sozialen Struktur der Gruppe. Das Lernen in Kleingruppen führt bei geeigneten Aufgaben zu günstigeren Lernergebnissen als das isolierte Lernen.

Je mehr man Schulunterricht von solchen Erziehungs- und Bildungsproblemen her zu sehen beginnt, gewinnt das Unterrichtsgeschehen eine beunruhigende Vieldeutigkeit und Variabilität. Ein allgemeingültiges, geschlossenes und in dieser Form lehrbares Unterrichtsmodell kann es dann nicht geben.¹)

Angesichts der gegenwärtigen Erziehungsphänomene in einer sich demokratisierenden Welt können wir Erziehungs- und Bildungsziele nicht mehr in einem einseitigen Aktionsprozeß gradlinig ansteuern und dem Schüler eine fertige Matrize unserer eigenen, oft überholten und fragwürdigen Begriffe aufprägen.

Das anzustrebende Unterrichtsmodell, in dem sich gruppendynamische Verfahren in verstärktem Maße realisieren sollen, kann nur ein ausgeprägtes, offenes Interaktionsmodell sein, bei dem durch Anwendung sozialer und individueller Unterrichtsformen versucht wird, Veränderungen der Bedürfnisse und Interessen herbeizuführen – und zwar auf mannigfaltige Weise. Es kommt nicht nur darauf an, daß etwas geschieht, oder sogar *genau* so geschehen muß, sondern vor allem darauf, wie und aus welchen Motiven heraus und mit welchem Erziehungs- und Bildungsgewinn etwas geschehen kann.

Bei diesem Unterrichtsmodell geht es in erster Linie um das rechte Lernverhalten, um primär motivierte Lernverhaltensformen, es geht um das Lernen des Lernens und des Lernenwollens, wobei nicht übersehen werden darf, wie sehr die Stimulation durch die Gesamtsituation sich auf das Lernverhalten auswirkt und eine Gesamthaltung vorbereitet, die *soziales Verhalten* und *Lernverhalten* einschließt und stabilisiert.²)

Zunächst: Eine Optimierung des Lehr- und Lernprozesses, die die Entfaltung eines *Selbsterziehungs- und Selbstbildungsprozesses* bewirken soll, erfordert Maßnahmen, die Subjekt und Gegenstand so zusammenführen, daß es zu einer höchst persönlichen Auseinandersetzung kommt, in der "Bildung" ermöglicht wird. Ein Unterricht, der den *Wandel im Verhältnis des Heranwachsenden zu Umwelt und Wissen*, und vor allem die andersartige Wissensversorgung des Lernenden außerhalb der Schule beachtet, erfordert improvisatorische Akte, Akte der Freisetzung des angestauten Wissens, die stärkere *Betonung des Sozialen und Demokratischen* erfordert Sozialformen, in denen der einzelne zwar entdecken kann, daß er "Ich" ist, aber auch, daß er "Ich" nur im "Wir" sein kann, und daß er beides zur Übereinstimmung bringen muß. Bei der Realisierung solcher Formen und Maßnahmen wird in besonderem Maße darauf zu achten sein, daß sie nicht formalisiert und ohne Rücksicht auf die Unterrichtsgegenstände ins Spiel gebracht werden. Die feinfühlige Anpassung der arrangierten Lern- und Arbeitsformen an die Unterrichtsgegenstände, Aufgaben, Probleme ist unbedingt erforderlich.

Grundkategorie des Modells ist *Verknotung*.

Knoten heißt italienisch *groppo*. Wir können es auch als Gruppe übersetzen.[3]) Verknotet werden müssen bereits in der Anfangssituation des Unterrichts Schüler und Gegenstand, und zwar in der Weise, daß sie "einander nicht mehr loslassen, sondern ins Gespräch kommen".[4])

Das didaktische *Arrangement* des Lehrers in der Anfangssituation hat diese "Verknotung" zu bewirken.[5]) Durch die Art, wie er den Gegenstand "gibt", wie er das Problem "vorwirft", wie er die Aufgabe stellt, schafft er eine "*groppo*" oder nicht. Sein Arrangement hat nur ein Ziel, ein Handlungsfeld aufzubauen, in dem jedes Kind in Aktion gesetzt wird, in dem die freien Denkakte zum Tragen kommen. Es ist ein Feld der *Improvisation* mit verschiedenartigen Lösungssituationen, in denen neue Knotenpunkte entstehen müssen. Jeder einzelne kann allein mit dem Gegenstand, mit dem Problem, mit der Aufgabe "verknotet" bleiben und eine Lösung versuchen. Er kann sich auch mit einem zweiten, dritten oder vierten Schüler zusammentun und eine gemeinsame Lösung kann versucht werden. Auch alle zusammen können sich gemeinsam mit der Sache auseinandersetzen. Die Struktur der Aufgabe bestimmt die Art dieser Knotenpunkte, die spezifische Lern- und Arbeitsform. Der Lehrer muß bereits in seinem Arrangement entschieden haben, wie die erste Lösungssituation aussieht. Er hat sich die Frage zu stellen, in welcher Lern- und Arbeitsform wird vermutlich der einzelne Schüler zu einer schnelleren und besseren Lösung kommen? Läßt sich die Aufgabe besser in Einzelarbeit lösen, oder in Kleingruppenarbeit, oder im Gespräch mit allen? Er weiß: Aufgaben, die zur Selbstkontrolle der eigenen Leistung führen sollen, müssen in Einzelarbeit erledigt werden. Aufgaben, die ein Heraussuchen erfordern (sucht Flüsse, Städte usw. heraus), sind gut in Einzelarbeit lösbar; Aufgaben, die eine persönliche Entscheidung und Begründung anzielen, können nur in Einzelarbeit durchgeführt werden.

Verhältnismäßig leicht kann der Lehrer auch entscheiden, ob die Lösungssituation ein Gespräch mit allen sein kann: ein gemeinsames Erlebnis kann gemeinsam von verschiedenen Gesichtspunkten durchdacht werden, verschiedene Lösungen können gemeinsam erörtert und ausgewertet werden, zu einem Projekt, das alle angeht, müssen alle ihre Meinung sagen können, Ergebnisse von Kleingruppen- oder Einzelarbeiten müssen oft gemeinsam im Gespräch erörtert werden.

Nicht ganz so einfach lassen sich spezifische Aufgaben für Kleingruppenarbeiten nennen. Abgesehen davon, daß die Aufgabe besonders gut motiviert sein sollte, muß sie vor allem vielseitig sein, damit jedes Kind in der Gruppe in der ihm gemäßen individuellen Ausdrucksweise seinen Beitrag leisten kann. Es sollte eine multivalente Aufgabe sein, das heißt, eine mehrere Möglichkeiten enthaltende, in mehrere Richtungen auffordernde Aufgabe. Aufgaben- und Problemkreise, die sich besonders für Kleingruppenarbeiten eignen, sind die folgenden drei:

- Aufgaben und Probleme, die die Kinder zum *Suchen* (nicht Heraussuchen) und *Forschen* anreizen. Es muß etwas *analysiert* werden.
- Aufgaben und Probleme, die die Kinder zum *Konstruieren* anregen. Es muß etwas gestaltet werden.
- Aufgaben, die von den Kindern ein *Trainieren* erfordern. Es muß etwas geübt werden.

Bei der Skizzierung eines Unterrichtsmodells, das Individualisierung und Sozialisierung gleichermaßen anzielt, das somit einen Prozeß von Gegenseitigkeit und Rückkoppelung in Gang setzt und die verschiedenen Möglichkeiten einer inneren Differenzierung mit geeigneten Lern- und Arbeitsformen zuläßt, sind zunächst für den Verlaufsprozeß zwei Kategorien erkennbar geworden:

- Das *Arrangement* des Lehrers in der Anfangssituation, mit dem Ziel, Lösungssituationen zur Entfaltung zu bringen,
- die *Improvisation*, d.h. die höchst persönliche Auseinandersetzung der Schüler mit dem Gegenstand, entsprechend der Struktur der Aufgabe entweder in Einzelarbeit oder in Kleingruppenarbeit oder im Gespräch mit allen.

Die Funktion des Lehrers in diesem Feld der Improviation ist noch nicht klar erkennbar. Sicher ist: er kann sich hier nicht in den Hintergrund begeben. Er muß lebendiger Mittelpunkt aller unmittelbaren Beziehungen zwischen den Gruppenmitgliedern bleiben. Bereits in seiner Unterrichtsvorbereitung hat er den möglichen Verlauf in seinen Knotenpunkten nach allen Möglichkeiten hin zu durchdenken, um infolge der angestrebten Differenzierung und Variabilität des Lernaktes im gegebenen Augenblick den Reaktionen der Schüler durch eigene Improvisation flexibel entsprechen zu können. Er hat sich für die Lösungssituation eine Vielzahl möglicher *Vermittlungshilfen* auszudenken, Hilfen, die eine elementare Erfassung des Gegenstandes gewährleisten und neue Zugänge zum Gegenstand öffnen können. Selbstverständlich können Vermittlungshilfen auch Fragen sein. Aber es gibt noch andere Möglichkeiten: Texte, Tafelskizzen, graphische Darstellungen, Bilder, Tabellen, Bücher, Symbole, Erzählungen, Modelle, Experimentiergeräte, Naturobjekte, Lupen, Sammlungen, Filme usw. Das Entscheidende wird sein:

einmal die Bereitstellung vieler solcher Hilfen, zum zweiten die Zurückhaltung bei guten Lösungen der Kinder, das Herausfinden der richtigen Einsatzstelle bei nicht geschickten Lösungsversuchen.

Theoretisch kann das Einhaken der Vermittlungshilfen an jeder Stelle innerhalb dieser Situationen erfolgen, die durch die Vielzahl und Andersartigkeit von Erfahrungen, Meinungen, Wissensbruchstücken, Vorschlägen und Gestaltungen und damit durch improvisatorische, nicht vorausplanbare Vorgänge gekennzeichnet sind. Die Stelle des Eingriffs kann vom Lehrer, der jetzt in diesen Situationen hauptsächlich Beobachter, Koordinator, Helfer ist, nicht vorher festgelegt werden, da sie in der Regel abhängig ist von den Aussagen und Handlungen der Kinder. Es muß in den variablen Lösungssituationen erspürt werden, wann die mögliche Vermittlungshilfe einsetzen muß, damit ein neuer Zugang eröffnet wird.

Die *Vermittlungshilfe* als dritter Wesenszug des Gruppenunterrichts setzt dann ein, wenn auf dem freien Feld der Improvisation der Schüler zu keinen oder zu falschen Lösungen kommt und somit die Überwindung objektiver Schwierigkeiten von seiten eines Erfahreneren notwendig wird. Dem Lehrer stellt sich auch hier die Frage, wie er eine arrangierte Lern- und Arbeitsform in eine andere überführen kann.

Wir haben bei der Beschreibung des Gruppen-Unterrichtsmodells stillschweigend vorausgesetzt, daß wir die traditionelle Organisationseinheit unserer Schule, die Klasse von 30–40 Kindern unterrichten sollen.

Untersuchen wir dieses an die Organisationseinheit Klasse gebundene Gruppen-Unterrichtsmodell nach *lernökonomischen Gesichtspunkten*, so kommen wir folgerichtig zu einer Modifikation und Ergänzung.

Wir wissen nämlich sehr genau, daß diese traditionelle Einheit mit einer konstanten Stärke im Blick auf die Entfaltung von Lernakten und Bildungsmöglichkeiten ein sehr unökonomisches Element unserer Schulorganisation darstellt.[6])

Sie ist zu groß, um Gespräche durchzuführen, an denen sich jeder einzelne aktiv beteiligen kann. Bei darbietenden Handlungen des Lehrers könnte sie dagegen auch doppelt oder dreimal so groß sein wie sie heute normalerweise ist. Modifiziert man das Gruppen-Unterrichtsmodell durch eine Neuorganisation, die auf eine ökonomische und daher flexible Gruppenbildung zielt, wird man bald feststellen, daß ein Ein-Klassen-Lehrer-System ebenfalls geändert werden muß. Es kann dann nicht mehr *ein* Lehrer für *eine* Klasse verantwortlich sein, sondern ein *Lehrerteam* für eine größere Unterrichtsgruppe. Es wird also sehr genau zu durchdenken und experimentell zu überprüfen sein, wie groß die Unterrichtsgruppe bei den verschiedenartigen Handlungen eines Lehrerteam seins muß, um die größte geistige Aktivität möglichst aller Schüler zu erreichen. Audio-visuelle Unterrichtsmittler, programmierte Lernhilfen und psychologische Schulleistungstests werden dabei eine wesentliche Rolle spielen.

In neuen Schulversuchen (z.B. Schulversuch Weinheim) wird bei der Anwendung des Gruppen-Unterrichtsmodells der lernökonomische Gesichtspunkt eine entscheidende Rolle spielen. Die Größe der Lerngruppen, die Funktion des Lehrers, die Unterrichtsmittel, die Art der Unterrichtsräume werden von der intendierten unterrichtlichen Tätigkeit bestimmt.

SCHEMA

Unterrichtliche Tätigkeit	*Kennzeichnung der Unterrichtsgruppen*
Darbietende Formen (Informationsaufnahme) u.a. Einführung eines neuen Unterrichtsgegenstandes, Aufzeigen der Intentionen, Erklären der Lernmethoden, Beantworten von Schülerfragen, Verfügbarmachen schwer zugänglicher Lerninhalte, Werten von Kenntnissen und Fertigkeiten, Zusammenfassungen	*Großklasse* (mehrere Klassen zusammen) *Schüler in Einzelarbeit* Lehrer: Vermittler, Initiator, Koordinator Unterrichtsassistent: Vorbereitung und Überwachung der Technik Unterrichtsmittel: Filme, Dia, Videobänder, Tonbänder, Schallplatten, Modelle u.ä. Unterrichtsräume: Hörsaalartige Räume in direkter Verbindung mit einem elektronischen Zentrum
Erarbeitende Formen (Informationsverarbeitung) – u.a. Diskutieren, Untersuchen von Auffassungen und Begriffen, kritisch Stellungnehmen, Austauschen von Meinungen und Erlebnissen	*Stammgruppe* (möglichst halbe Klasse, 15–20 Schüler) Lehrer u. Ass.: Diskussionsleiter, Berater, Auswerter Unterrichtsmittel: Lern- und Arbeitsergebnisse, Texte, Bilder u.a. Unterrichtsräume: Klassenzimmer
– u.a. Analysieren, Konstruieren, Beobachten, Experimentieren u.a.	*Kleingruppe* (2–4 Schüler) Lehrer u. Ass.: Berater, Prüfer, Helfer, Unterrichtsmittel: Arbeitsmittel für Kleingruppenarbeit, Baukästen, Experimentiermaterial, Nachschlagewerke, Bücher, Modelle u.ä. Unterrichtsräume: Gruppen-Nischen, Büchereien

– u.a. Lesen, schriftlichen Fixieren, Abhören von Tonbändern und Schallplatten, Üben, Zeichnen, Memorieren	*Schüler in Einzelarbeit* Lehrer u. Ass.: Berater, Prüfer, Helfer Unterrichtsmittel: Sprachlabor, Lernprogramm, Arbeitsanweisung, Baukästen Unterrichtsräume: Klassenzimmer, Laboratorien, Studios, Lernkabinen

Wirkungen des Sozialisierungs- und Individualisierungsprozesses im Gruppenunterricht

Die gesamten Einflüsse und Folgen des entwickelten Unterrichtsmodells werden sich erst nach Jahren zeigen, oder sie bleiben uns sogar ganz verborgen. Im folgenden können nur – als erste Ergebnisse verschiedener schulpädagogischer Feldstudien an Schulen in der Bundesrepublik Deutschland7) die Wirkungen beschrieben werden, die während oder nach der erfolgten Schularbeit nachweisbar waren:

1. In den sozialen Lern- und Arbeitssituationen (Gespräch und Kleingruppenarbeit) lernt jedes Kind rasch seine *Schwächen* und seine Begabung erkennen. Besonders in den Kleingruppen, in denen jeder den anderen genau kennt und mit ihm in engster Verbindung bleibt, lernt es bald, seine *tatsächlichen Fähigkeiten* in den Dienst seiner Gruppe zu stellen. Jeder findet dabei die natürlichen *Grenzen* seiner Freiheit. Das Besinnen auf den anderen durchdringt immer wieder die geringfügigsten Begebenheiten. So erkennen wir auch bald einen positiven Einfluß auf die *äußeren Umgangsformen* jedes einzelnen.

2. Der starre, nur auf individuelle (isolierende) Lern- und Arbeitsformen (Einzelarbeit, Klassenarbeit) beschränkte Klassen-Unterricht läßt in vielen Kindern nur zur Hälfte Verstandenes oder gar Unverstandenes zurück. Die Kinder werden oft unruhig und unsicher: denn während sie Halbverstandenem noch nachsinnen, geht ihnen ein Teil der weiteren Entwicklung und schließlich auch der Gesamtzusammenhang verloren. Durch das Einbeziehen der sozialen Lern- und Arbeitsformen (Kleingruppenarbeit, Gespräch) wird diese Gefahr ausgeschlossen, da im Interesse eines gemeinsamen Zieles eine *wechselseitige Kontrolle* möglich ist. Damit sind die natürlichen Voraussetzungen zu einer *Intensivierung des Lernprozesses* gegeben. Die Analysen von Gruppen-Arbeitsverläufen, die die Wesenszüge der Denk- und Handlungsweise des Kindes in der Gruppe erkennbar machen können,8) zeigen deutlich:

a) Bei der Arbeit in Gruppen entstehen verschiedene Auffassungen. Dadurch wird jeder einzelne vor ständig wechselnde Situationen gestellt und gewinnt dabei an *Wendigkeit*. In der multivalenten Situation erlangt er allmählich die *Fähigkeit, sich zu entscheiden*, wo er sich anpassen und wo er Widerstand leisten muß.

b) Jeder einzelne setzt sich bei der Kleingruppenarbeit *aktiv – seiner Individuallage gemäß* – ein und zeigt sich als nützliches und brauchbares Glied.

c) Jeder einzelne arbeitet nicht nur das, was er will, was er gut kann, was ihn besonders interessiert – im Interesse der Sache, der gemeinsamen Aufgabe und seiner eigenen Förderung setzt er sich auch dort ein, wo er Unbehagen und Schwäche fühlt.

d) Die *Selbständigkeit des Denkens* wird in hohem Maße geschult, so daß die Mehrzahl der Kinder befähigt wird, übernommene Begriffe, Urteile und Schlußfolgerungen auf ihren Inhalt, ihre Richtigkeit und Stichhaltigkeit zu prüfen. Sie stehen ihnen in kritischer Besinnung gegenüber, machen sich eigene Gedanken und dringen zu neuen Erkenntnissen vor. Die Gewinnung einer gesunden *Kritikfähigkeit* führt dazu, daß das so häufige "Nachbeten" fremder Meinungen eingedämmt wird.

3. Der Gruppen-Unterricht bewirkt eine soziale Disziplin, die sich durch gegenseitige Anpassung und durch die Zusammenarbeit auf ein gemeinsames Ziel hin ergibt. Er begünstigt die *sittliche Selbstbestimmung* und befähigt das Kind und den Jugendlichen, sich in die Lage des anderen zu versetzen, die gegenseitige Angewiesenheit einzusehen, zu entdecken, daß Aufrichtigkeit für den Bestand von sympathischen Beziehungen und gegenseitiger Achtung notwendig ist. Die Kinder werden zum Nachdenken, zu objektiver Prüfung und zu persönlicher Stellungnahme geführt. An die Stelle der bisherigen Fremdbestimmung tritt auf ethischem Gebiet ein *persönliches Wissen um das Gute*. Darüber hinaus wird das *Selbstwertgefühl* des jungen Menschen, seine erwachende Bereitschaft zur Risikoübernahme, seine Lust zur Verantwortung wesentlich gesteigert.

ANMERKUNGEN

[1] Hierauf wird besonders von Heimann hingewiesen. P. Heimann: "Vergleichende Unterrichtslehre". In: *Vergleichende Erziehungswissenschaft*, Hrsg. Hans Espe. Berlin: Orbis, 1956.

[2] Siehe J. P. Ruppert: *Die seelischen Grundlagen der sozialen Erziehung*, Bd. III. Weinheim: Beltz, 1965, S. 56; O. Engelmayer: *Menschenführung im Raume der Schulklasse*. München: Ehrenwirth, 1968.

[3] P. R. Hofstätter: *Gruppendynamik*. Hamburg: Rowohlt, 1957, S. 177.

[4] H. Roth: *Pädagogische Psychologie des Lehrens und Lernens*. Hannover: Schroedel, 1957, S. 124.

[5] Die hier entwickelten Kategorien werden mit Beispielen belegt in E. Meyer: *Unterrichtsvorbereitung in Beispielen*. 13. Aufl. Bochum: Kamp, o. J.

[6] Siehe hierzu K.-H. Flechsig: "Zur Umgestaltung der Unterrichtsorganisation". In: *Analysen und Modelle zur Schulreform*. 3. Sonderheft der Neuen Sammlung. Göttingen: Vandenhoeck & Ruprecht, 1966; H. Strauss (Hrsg.): *Modell eines*

neuen Gymnasiums. Freiburg: Rombach, 1966; ders.: Team teaching – konkret. Freiburg: Rombach, 1968. E. MEIER (Hrsg.): "Schulexperimente in Beispielen". *Didaktische Studien*. Stuttgart: Klett, 1969; W. ZIFREUND (Hrsg.): *Schulmodelle, Programmierte Instruktion und Technische Medien*. München: Ehrenwirth, 1968.

[7] Es handelt sich um Untersuchungen, die der Verfasser im Zeitraum von 18 Jahren in Schulen von Worms, Mainz, West-Berlin, Heidelberg und in einer Reihe von Landschulen durchführte. Siehe E. MEYER: *Gruppen-Unterricht. Grundlegung und Beispiel*. 5. Aufl. Oberursel: Wunderlich, 1969; ders. (Hrsg.): *Sozialerziehung und Gruppen-Unterricht – international gesehen*. Stuttgart: Klett, 1963, S. 65 ff. Die dargestellten Ergebnisse konnten anläßlich des internationalen Symposiums über "Individualisierung und Gruppenarbeit in der Schule" in Stockholm 1967 von den Vertretern von 15 Ländern bestätigt werden.

[8] Vgl. die Analysen in E. MEYER: *Offene Schultür – Zeitnahe Unterrichtsarbeit*. Oberursul: Wunderlich, 1957, S. 65–102; ders.: *Gruppenunterricht – Grundlegung und Beispiel*, a.a.O., S. 180–241 u.S. 224–240.

GROUP DYNAMIC METHODS FOR THE OPTIMIZATION OF THE TEACHING AND LEARNING PROCESS

by ERNST MEYER, Heidelberg

In the first part of the article the author examines the question of the best way of achieving socialising and individualising processes, in other words, group dynamic processes in schools. It is shown that any form of school education in the present situation of education in a world gradually becoming more democratic can only take the form of open interaction, with the aim of self-education by the use of social forms (discussion, small groups) and individual forms (individual work, frontal instruction). The essential features of this type of school work are: 1. Positioning of the teacher in the initial situation, with the aim of developing promising situations; 2. Improvisation, i.e. the very personal interaction between pupil and object, in accordance with the structure of the problems, either in the form of individual work or in small groups, or by discussion with all pupils; 3. Assistance provided by the teacher, to ensure an elementary grip of the subject matter, and to open new approaches to it. An examination of the organisation from the point of view of learning economically, is a condition for the optimization of the teaching and learning processes. Teaching by teams of teachers and by audio-visual media, and rules on the size of groups of pupils in accordance with the intended teaching activity improve the efficacy of dynamic methods.

In the second part, the effects of these methods are investigated. The results show that the social attitudes required for practical life can be developed, and that civilised forms of co-operation, mutual assistance, solidarity, and mutual understanding can be stimulated. The child can become a personality only by a process of socialisation on meeting others. The social meetings developed by the teacher, where improvisations are a constituent of the situation, are a condition for any type of effective teaching and educational work.

The results also show that group work requires the full cooperation of each individual and thus generates an effective pedagogic atmosphere in the social, intellectual and moral areas, an environment that also stimulates the general process of learning. A school concentrating on a really social education with the aid of the model presented here fulfills its function of helping the pupil to adapt himself to the structure of modern society and a modern way of life.

METHODE DE LA DYNAMIQUE DE GROUPE EN VUE D'UNE EFFICACITE OPTIMALE DU PROCESSUS D'ENSEIGNEMENT ET D'APPRENTISSAGE

par Ernst Meyer, Heidelberg

Dans la première partie de l'exposé, l'auteur étudie les possibilités de réalisation – selon un modèle – de processus de socialisation et d'individualisation et donc de méthodes appartenant au domaine de la dynamique collective, dans l'enseignement scolaire. Il a été prouvé qu'un modèle d'enseignement, dans un monde en voie de démocratisation et étant donné les phénomènes d'éducation actuels, ne peut être qu'un modèle ouvert d'interaction visant à un processus d'auto-éducation par l'emploi de formes sociales (discussion, travail en petit groupe) et de formes individuelles (travail individuel, enseignement collectif). Les traits essentiels d'un tel enseignement sont les suivants: 1. Le dispositif du maître dans la situation initiale, dans le but d'amener le développement de situation constituant les éléments d'une solution; 2. L'improvisation, c'est-à-dire l'affrontement entièrement personnel des élèves avec l'object, soit par le travail individuel, soit en travaillant par petits groupes, soit par une discussion avec tous, conformément à la structure des tâches; 3. L'intervention et l'aide du maître, garantissant une compréhension élémentaire de l'object et de nouveaux accès à l'object. La condition préalable d'une optimalisation du processus d'enseignement et d'étude est constituée par un examen de l'organisation en considération des facteurs économiques de l'enseignement. L'enseignement par des équipes de maîtres et par des moyen audio-visuels, la fixation de la grandeur des groupes d'étude suivant l'activité d'enseignement envisagée, sont autant d'éléments qui peuvent accroître l'efficacité de méthodes dynamiques.

Les effets de telles méthodes sont exposés dans la deuxième partie sur la base d'enquêtes. Les résultats prouvent que les comportements sociaux nécessaires pour la vie peuvent être développés et qu'il est possible de promouvoir la forme policée de la collaboration, l'aide mutuelle, la solidarité et la compréhension mutuelle. L'enfant ne peut acquérir sa personnalité que par un processus de socialisation se réalisant par la rencontre. Les actes de rencontre sociaux développés par le dispositif du maître, et dans lesquels des improvisations se produisent, sont les préalables de tout acte effectif d'enseignement et de formation.

Les résultats montrent en outre que l'action commune dans le groupe exige la coopération intégrale de l'individu et produit donc, dans le domaine social, intellectuel et moral, une atmosphère pédagogique efficace qui est également profitable à tout le processus d'enseignement. L'école qui rend possible, à l'aide du modèle présenté, une éducation sociale proprement dite, remplit la tâche de l'aide d'adaptation aux structures des formes de vie modernes.

ASPECTS OF COMMUNICATION IN A GROUP LEARNING SITUATION

by John D. Williams, Sherbrooke

Introduction

Where a learning situation is both novel and complex we are well advised to watch it carefully before deciding on how best to carve it up for experimental investigation. The learning situation with which we are concerned in the present report – a situation in which small groups of primary-school children try to discover mathematical structures by playing games involving concrete materials – incorporates both of these features.

The subjects observed were primary-school children of 6 to 9 years of age in eight classes in schools in Vancouver and Sherbrooke. These children were learning aspects of sets, logic, number-systems and group structures, as presented in the Dienes programme (see below).

The observer watched and listened to the children but occasionally questioned them or introduced situations which would elicit behaviour which might throw light on questions that occurred to him.

While much of what is presented in the following pages can be accorded the status of "fact", it should be remembered that only eight classes were involved in the observations and that the conditions of observation were by no means standardised. Perhaps the main purpose of the present essay is to air some of the interpretations that derived from the investigator's observations, in the hope that other investigators who have access to this kind of learning situation might find among these interpretations views that interact productively with their own.

The report is presented in four sections. The first gives a very brief description of some of the characteristics of the materials and activities involved in the learning situation. The second points out certain features of this learning situation which render it particularly suitable to a study of the present kind. The third concerns itself with aspects of group interaction that are relevant to communication. The fourth is concerned directly with communication among group members and between them and the teacher. The third and fourth sections are each in two parts – an initial outline of observations, and a subsequent commentary on research possibilities.

Materials and Activities Involved in the Learning Situation

Both among and within the school classes observed there existed such variety, in terms of subject matter, learning materials and learning activities, that it will be impossible to provide here more than a very partial indication of the character of the learning situation.1)

In becoming acquainted with sets, relations, logic, number-systems, group-structures and many other mathematical topics, children used many kinds of apparatus, but relied particularly on artificially-contrived apparatus such as the Dienes Logical Blocks and Multibase Arithmetic Blocks. Because some of our comments relate to particular aspects of these, we shall provide a brief description of them.

The Logical (or Attribute) Blocks are objects which vary systematically in shape, colour, thickness and size. There are
four shapes: square, oblong, triangle and circle.
Each shape appears in each of
three colours: red blue and yellow.
Each colour of each shape appears in each of
two thicknesses: thick and thin.
Each thickness of each colour of each shape appears in each of
two sizes: large and small.

Altogether, therefore, one set contains 4 × 3 × 2 × 2 = 48 pieces. In the Dienes programme these blocks are used extensively in the learning of sets, propositional logic, and a wide range of mathematical structures that can be depicted by operations upon attributes.

The Multibase Arithmetic Blocks are models of various number systems. They are formed of structures that are multiples of a unit cube. These structures increase in size in geometrical progression. For example, the usual decimal number system would be represented by structures of the following sizes and shapes:

1, or 10^0	10, or 10^1	100, or 10^2	1,000, or 10^3
(units, in the form of small cubes)	(tens, in the form of rods of ten small cubes)	(hundreds, in the form of slabs of ten rods)	(thousands, in the form of big cubes of ten slabs)

while the base-3 number-system would be represented by structures of the same series of shapes, but of the following sizes:

1, or 3^0 3^1 3^2 3^3

Most of the learning took place during the course of playing games that involved carrying out "mathematical" operations on materials such as those described above. Many accessories were used, such as hoops, for representing Venn diagrams, "logical trees", for sorting blocks into sets, and large squares, cubes, triangles and tetrahedra, for representing various kinds of transformation.

Children were allowed to move freely round the classroom, and, generally, to determine for themselves what they did and in whose company they did it.

Important Features of this Learning Situation

Certain features of this kind of learning situation render it particularly amenable to observational study:

1. *The subject-matter to be learnt consists of certain mathematical structures*,which are presented in a variety of different situations, so that the learner might abstract the structures by recognising which aspects are common to all situations. One of the bonuses of the study of mathematics learning derives from the fact that mathematical structures can be communicated to the learner by embodying them in sets of rule-restricted games. The rules of these games provide confines within which the learner can be expected to behave. Confines of this kind simplify the behaviour to be observed, provide the observer with a clear and detailed idea of what the learner is trying to do, and standardise the learning behaviour in such a way that it can be specified and that meaningful comparisons of different learners can be made.
2. *Learning involves the manipulation of concrete materials*. Since this manipulation is visible to the observer he is able to divine much about the learner's plans, hypotheses, misconceptions etc. by simply watching. To this extent, the learner's thinking is "externalised".
3. *Learners work in small groups*. This feature provides further opportunity for the observer to study the learner's progress towards the acquisition of concepts – for, in communicating their ideas to one another, learners at the same time communicate them to the observer.
4. *Learning takes place by a process of discovery*. Although this kind of learning clearly lends itself less to control and therefore experimental manipulation than does guided learning, it at the same time reveals to the observer some interesting features of the learner's strate-

gies which would not be likely to manifest themselves in a situation in which learning-behaviour was more closely prescribed.

The foregoing description of the main features of our learning situation might suggest that this situation had been contrived especially for the convenience of observational study. This is far from the case: from many points of view it can be claimed that the manipulation of concrete materials in small groups is an extremely effective way of discovering mathematical structures. In fact, one of the main objects of the present exercise was to obtain information which might lead to an understanding of this important species of learning situation.

Aspects of Group Interaction

Such characteristics of the learning group as its structure, size, fluidity and composition are of direct relevance to the kinds of communication that take place in it. In this section we offer some comments on these features of the group.

Group Structure. Observations that might be made about the grouping of children in learning situations must clearly take into account the kind of learning situation involved. From the point of view of most of the observations on communication that we are likely to make it is useful to place learning situations into three categories:

1. Situations in which children work on a joint enterprise *without* any definition of the roles of individuals – generally speaking, and in terms of the more obvious of the criteria we might apply, these seem to be the least effective of the group learning situations, but can become effective as "teacher-child" situations (see below).
2. Situations in which children work on a joint enterprise *with* definition of roles. Cases of this are competitive games or games in which children take turns in making their moves. Such situations ensure the active participation of all children, and, since the group's attention is on each individual as he moves, permit sharing of hypotheses and ensure both correction of false moves and social motivation.
3. Situations in which children are merely in the same location and using the same materials but are working individually with no necessary occasion for interaction. Usually this kind of situation occurs when children are partly occupied in the recording of their manipulations.

Group Size. The suitable *size* for a group naturally varies with the kind of game that is being played, but there seem to be *some* generalisations that might be made about this aspect of grouping:

1. Where children work in pairs there is opportunity for the brighter child to devote a great deal of attention to the problems of communication of the duller child. However, this is not really a practicable grouping arrangement, for apart from other considerations, in one class of children there may not be enough bright children to distribute over every pair.
2. In threes there seems to be just enough attention to spare for each child's problems to receive some consideration from other members of the group. However, many of the games seem to break down into a two-move structure – when child A has begun to make a move, child B begins to plan his; child A is then interested in B's move as a sequel to his own, and is motivated to provide *its* sequel; likewise, child B takes a particular interest in the move that follows his, and so on. This means that the slowest child might receive very little opportunity to make a move.
3. The behaviour of fours must be ordered by some kind of framework if attention is going to be paid to each child's problems. Where a suitable framework exists, such a group often works successfully as two teams.
4. Groups of five and more, excepting in occasional cases in which their behaviour is adequately structured by the learning situation, tend to fragment or to split up into teams. Often, all but two or three of the children will have to play the role of passive onlooker. Where grouping is mixed in relation to ability, such groups may well contain extremes, whose comprehension is desynchronised; difficulties of personal contact in such large groups may preclude the synchronisation that might be possible within equally heterogeneous but smaller groups. Migration from group to group tends to occur frequently where groups are of this size.

Migration. In the case of most of the classes observed, the grouping was flexible. This state of affairs might be thought to lead to a maximisation of choice of activity for the individual child, and to enable children who are out of step with their group to take a step up to a more advanced group or down to a less advanced group. However, cross-group migration tended not to take place very often, excepting where, as mentioned above, groups were large, or where they were very poorly structured. The indications were that it would have been difficult for a child joining a new group to "tune in" to activities that were already under way.

Heterogeneity. An important question is that of the degree to which groups should be homogeneous in ability. For some kinds of learning activity this resolves itself into the question of whether one wishes to ensure that all children engage actively in the learning process, or whether one is willing to sacrifice this requirement, in allowing the progress of the group to be accelerated by brighter children who either perform while slower children watch, or organise and explain to the slower children. Some interesting aspects of child interaction may be relevant to one's choice:

1. It seems *not* to be necessary for a child actually to *engage* in manipulative activity for him to be able to appreciate its implications. It seems that, after a certain amount of direct participation, a child can substitute other children's participation for his own. Perhaps, before one can appreciate football it is better to have played it at some time, but perhaps the game can be better *appreciated* by an experienced *observer* than by an active participant. It could well be that, at certain points in the development of concepts, active participation serves merely to distract attention from the basic processes underlying an activity. One might explain the superiority of observer-behaviour over participant-behaviour for certain purposes, by supposing that different, and, perhaps, incompatible, strategies of processing information would operate in these two cases. In participant-behaviour it is important that responses should be *articulated*, but, in observer-behaviour, where such articulation is not so important, attention can be paid to the *classification* of responses.
2. It seems that one child ("teacher-child") may be able to teach another ("pupil-child") in ways in which an adult teacher cannot:
    a) The pupil-child seems to be inclined to doubt and question the statements of the teacher-child more readily than he would those of the adult, and may thus be less likely to accept information without interpreting it.
    b) A child seems to be more easily able to *mimic* another child than an adult. Learning by imitation is likely to be of great importance where the learner is not yet able to abstract from his teacher or model those aspects of behaviour that he wishes to acquire. Where the teacher or model has greater si-

milarity to the learner, imitation with relatively little abstraction of relevant behaviour is more likely to be possible. While, ultimately, it is desirable that relevant behaviour should be abstracted, it may be that the *initial adoption* of this behaviour most readily takes place where the behaviour is embodied in a model with which the child can identify.

3. In view of points 1 and 2 one should be careful not to rule out the possibility that something *like* individual discovery learning is taking place, even where the learner has apparently assumed a passive role. For example, it is one thing to receive predigested information from an adult from whom one is used to receiving reliable information, but perhaps a very different thing to observe information being discovered by someone whose moves one can doubt and with whose role one can identify.

Perhaps the brighter child's possibilities as a teacher could be systematically exploited. Having passed through a learning experience in an elitist group, bright children could be dispersed over groups of slower children for purposes of guidance.

An interesting side-effect of the present group learning situation was that, in some of the cases observed, it manifestly provided opportunity for the integration of children from different cultural backgrounds. Since much of the activity was carried out on a non-verbal level, children who spoke different languages were able to work together. In one multiracial school the headmaster considered that the introduction of this kind of group activity had greatly stepped up integration.

Research Issues (Group Behaviour)

Role-definition. What is the relative effectiveness of learning by individual activity, as compared with learning in groups where roles are defined, or groups where roles are undefined? Effectiveness could be measured in terms of amount of learning achieved and degree of observed participation at various levels of ability.

Precisely what are the role differences that appear within a group, and how can we exploit them? How can we manipulate them? What, for example, would happen in a situation in which natural role-development was replaced by specialisation that was prescribed by the nature of a learning-game?

Size. Again, in terms of these dependent variables, which are the most effective sizes of learning group in relation to particular learning tasks? And how are patterns of interaction among members of a group affected by the size of the group and the relative ability of its members? This last question could also be related to the kind of learning task involved. A proposal made later in this article, concerning networks of communication among members of groups, is relevant to studies of this kind.

Manipulation. Experiments could be carried out in which the logistics of group organisation were systematically investigated. For example, cross-group migration could be encouraged so that the chances of a pupil being in a group in which he was learning something new but not too difficult were (theoretically) maximised. Ways of relating group-composition to the distribution of ability within each class might be studied. For example, where one has only few children bright enough to inject a given level of insight into a group learning situation, one should perhaps increase the size of one's groups so that at least one such child can be included in each.

Imitation and Passive Learning. Can we make use of teacher-children? What are the differences between the child and the adult as teachers?

What are the mechanisms and possible advantages of learning by imitation? An imitated response is an "embodied" response. How can our knowledge of the learning of physically embodied concepts help us to understand the process of learning by imitation?

What are the differences between *observer*-behaviour and *participant*-behaviour in learning? What does each have to contribute? Where is the optimal point in a learning sequence for each to occur? What are the "learning-sets" that enable the learner to dispense with participant-behaviour?

We should be able to compare a set to *articulate* responses with a set to *classify* responses. What are the respective effects of these sets on such outcomes as ability to do, ability to describe and ability to analyse? Which learning conditions conduce to the development of each kind of set?

The "Flywheel Effect". What are the side-effects of the group-learning situation on the child's learning-style in other lessons, on children's social interaction and on the ways in which children play in their spare time? While these side-effects may be of interest in their own right, they are also of interest, in that they could demonstrate the operation of a "flywheel principle" – that is, the greater the influence of an activity on the learner's general behaviour, the greater is the opportunity for reinforcement of this activity by learning that takes place outside of the limits of official classroom hours.

Communication

In this section we shall concern ourselves with some of the kinds of communication and communicational tool that characterise a group learning situation that involves the use of concrete materials. Since our learning situation provides special opportunities for non-verbal communication, we shall be particularly concerned with this and its relation to verbal communication.

Aspects of the Learning Environment. Much communication among children and between child and teacher is carried out with concrete learning materials rather than with words. The most common example of such communication is provided by the situation in which one individual observes the operations carried out by another. The physical characteristics of materials are likely to affect, in many different ways, the kind and degree of communication taking place. For example:

1. Thickness of the Logical Blocks can be appreciated best when they are seen from a lateral view, and is likely not to be noticed unless specifically looked for. Moreover, it is difficult to depict graphically.
2. While the shape of the Logical Blocks is more readily appreciated than their thickness, it does not become apparent unless a reasonable amount of a block is seen.
3. Colour is probably more readily recognised than either thickness or shape, for it is pervasive, and hence ascertainable even where only small parts of a block are seen.
4. One way of ascertaining the value of a variable is to find out what it is *not*. Where a variable can assume several values this process of elimination is less easy to operate. For example, if we know that a Logical Block is not thick, we also know that it is *thin* – for the variable "thickness" has only two values. But even if we do know that it is not a triangle, we still need to know which it is of the three other shapes that it could be.

   If it is important to include a four-valued variable, might we not use four colours rather than four shapes? One might feel so, in view of the notes 1, 2 and 3 above. Of course, it may be the case that, despite these arguments, shapes are more readily recognised by virtue of the fact that, in the child's general experience, they are found to be of greater significance as attributes than are colours (c.f. Locke's "primary", rather than "secondary",qualities). Perhaps another consideration that might qualify our conclusions is the common claim that children pay more attention to colours, relative to shapes, than do adults.

5. Continuous with the previous point is the question of the communication and therefore discrimination of *number* values. Where values are designated in terms of number systems of the lower bases there are fewer alternative *values* within each order of the base number, but more orders to discriminate among. For example, in the case of the number seven, the child working in the base-10 number system would need to discriminate between the numeral representing this and the nine other numerals that might represent numbers in the "units" order of this system. But, since only one order (the 10^0, or "units" order) would be involved, he would need to make no discrimination among orders. Now, suppose he was working in the base-3 number system. While, within each order, he would need to distinguish any numeral from only *two* alternatives, a number like seven would be represented in *two* orders (3^0 and 3^1) so that he would need to discriminate between orders as well as between numerals *within* orders. How are discriminations, communications and other aspects of learning affected by the number of orders and number of values within each order? Is there an "optimal" number-system for use with certain numbers and for certain purposes?[2])

   Again, within the orders of the higher bases, numerousness of units seems to pose an important problem. To what extent do ready-structured "number-pieces", like those of Cuisenaire, help to solve this problem? The M.A.B. structuring of powers of the base number very effectively reduces "numerousness" where numbers above the base number are involved.

Merits of Verbal Communication. While much communication can be adequately carried out by means of gestures or materials, there are occasions on which verbal communication is clearly desirable. Among the children (rather than between child and teacher) there seem to be the following occasions for verbal communication:

1. Just as verbalisation can enable an *individual* child to summarise a generalisation, so is it likely to enable *groups* of children to engage in conversations that involve generalisations. In fact, it might be pointed out that while it is nothing like absurd to say that a concept exists in an individual child's awareness without a corresponding statement, it is more nearly absurd to say that a concept exists in communication among children independently of a statement. There seem to be many occasions on which group learning

behaviour would be facilitated were there more adequate tools of communication.

2. Conflicts. Frequently, arguments about appropriate moves arise. Sometimes children can settle these on a verbal plane, but, presumably because they lack the linguistic equipment to do otherwise, they sometimes find it necessary to try to demonstrate their points by manipulating apparatus. Since there is no verbal formula for the state of affairs with which a disagreement is being expressed, the antagonist expresses himself by replacing, and thus obliterating, the existing representation of a state by a representation of the proposed substitute. The process of reversing this substitution is often too difficult to be countenanced. Hence, a physical parallel of discussion tends not to be possible – for what might be suggested tentatively in discussion must be enacted irrevocably in manipulation. It is perhaps because of this that children tend not to be able to afford to consider one another's alternative points of view, and react defensively and rigidly on one another's suggestions. In turn, this is likely to lead to *monopolistic* behaviour, in which the plans of one child are followed through, and the active participation of other children is considered by the group to be disruptive.
3. Recording. Most of the previous point is related to the non-availability of a device for *recording*. Before alternative proposals can be considered in sequence an efficient recording device is plainly needed. One can think of a few forms that such a device might take:
   a) Physical representation – perhaps a "shadow" set of apparatus could be used for the expression of alternative proposals.
   b) Graphical representation – fairly formalised sketching.
   c) Verbal symbolisation. Most obviously, children might be encouraged to use written means of symbolising the states they produce. However, oral formulation should not be underrated. Although its ephemeral nature might appear to disqualify oral formulation from use in recording, it might serve this purpose in two ways:
      i) Formulation, even orally, can involve summarisation in an economical form that is relatively easy to retain in the memory.
      ii) Communication to other children can be said to increase the available space in the memory store (for certain purposes, two minds have more capacity than one).

4. Participation. We have considered the role that verbalisation might play in discussion (see points 1 and 2), but there are indications that it would also facilitate participation in group activity in many other ways. For various reasons pointed out in other parts of this paper, "group" learning with concrete materials is liable to degenerate into monopolistic behaviour. Again, where children are encouraged to pursue self-determined courses of activity, they are likely to diverge in the operations they decide to perform, and, especially, in the plans for operations that they develop. To overcome these obstacles to purposeful co-operative behaviour, verbal tools filling the following specific roles might be useful:
    a) Enabling a child to describe his purposes, in carrying out a particular operation, so that another child can follow and perhaps participate. Perhaps a vocabulary of procedures and – as procedure-descriptions lean heavily on specification of positions in sequences – one giving special attention to order-terms, would be suitable for this purpose.
    b) Enabling a non-participating child to "claim a go" and to commence active participation. For this purpose, perhaps certain claiming-utterances could be established. Alternatively, a good supply of succinct "procedure-map" utterances might enable the non-participant to outline his proposals, and hence take over from the monopoliser.

"Engagement" and Mode of Communication. While certain aspects of verbal behaviour are likely to facilitate participation, concrete representation can contribute in some interesting ways to this same end. "Engagement" (which is what we might call the initiation of participation) seems to be particularly easy when the activity to be commenced involves concrete materials. It is by no means obvious that we can attribute this difference in ease of engagement solely to important differences between concrete materials and verbal or other symbolic statements, but, supposing we could, we might be able to explain this difference by such factors as the following:

1. Usually, oral presentations are "concatenated" in that their parts follow one another in time. For this reason it is difficult to scan them for meaningful patterns – immediate memory being as limited as it is. Concrete presentations, however, can well embody a complex message by a single state of affairs in which the parts are simultaneously available, thus permitting exploratory scanning for meaningful patterns.

2. Again, oral presentations are sequentially structured, and at any point at which engagement is attempted there may be difficulty in interpreting an utterance without acquaintance with preceding parts of a sequence of inter-dependent utterances.
3. Finally, there may be some sense in saying that a concrete situation contains more redundant information than would an attempt to formulate some aspect of it. Before he has successfully interpreted a formulation the subject must have recognised the particular point of view, or "abstraction-policy" underlying a formulation. Before he has done this the formulation is likely to have little meaning for him. Concrete situations, on the other hand, will usually admit of interpretation from a variety of points of view and could well afford more points of departure for active (even if misguided) interpretation than would a relatively specialised formulation of some aspect of these situations. Such points of departure enable the learner's attention to "get a foothold" in the situation, in that they enable him to launch himself on a course of active interpretation.

Internalisation of Communications. It seems likely that many of the concepts that the child acquires as a result of group learning are in the form of internalised communications, and that, as a consequence, the form of these communications affects the nature of the concepts. For example, in order to stress to one another the direction of relational arrows, children will often run their fingers along these arrows in the direction in which the arrows point. Such an action perhaps provides the child with a kinaesthetic image of the process that he is depicting, and perhaps such an image will form the basis of his concept of this process.3) Perhaps, also, it could be said that communication by means of gestures and movement of physical materials would be likely to provide a more useful internalised representation of mathematical concepts than would communication by means of words: it could be argued that, just as mathematical concepts can be discovered by exploring aspects of space and movement, so can they be refined and elaborated by exploring the possibilities of visual and manipulative images.

Incompatibility of Representations. Spoken and written language have a syntax which, at times, may come into conflict with various order aspects of a graphical representation of a mathematical operation.3) For example, when the addition of y to x is represented as producing z, the x might be represented to the left, the operation of adding y to the right of it, and the sum to the right of both of these, as in the diagram below. The situation will then be read from left to right. However, when this situation is described in terms of words, the child might well describe it as follows: "Adding y to x gives z". It can be seen that the operation "adding y to" comes first in the verbal representation but second in the physical representation. This difference in orders sometimes confuses the child.

Graphical representation: x —— add y ——> z (order:x, y, z)
Verbal representation: adding y – to x – gives z (order: y, x, z)

Research Issues (Communication)

Communication with Apparatus. It would be quite easy to study the ways in which various physical aspects of learning materials influenced the degree to which one child could communicate with another. Some such situation could be devised as one in which either the experimenter or a child carried out a series of operations on materials while another child tried to understand these operations – indicating understanding either by verbal explanation or by extrapolation from the series. In this situation the relevant independent variables could be varied. For example, the effect of colour, as a stimulus whose values needed to be discriminated among, could be compared with that of thickness or that of shape. A child might find it easier, for example, to discriminate among values of colour than values of shape. This relative facility would be demonstrated by the fact that, in the case of one of these dimensions, he was more readily able to understand the sequence of operations, than in that of the other. In this general way, aspects of the physical characteristics of the apparatus, such as number of values of each dimension, number of dimensions involved, etc., could be investigated.

In connection with the foregoing series of studies, one might investigate some aspects of the dynamics of the relationship between physical characteristics of apparatus and communication. For example, does the child often establish the identity of a set from a knowledge of the nature of its complement? Clearly, where a variable has only two values, it will be easier to establish the identity of one of the values by a process of eliminating the other of the values, than it would be where a variable had more than two values. How does the child's tendency to use a process of elimination, and how does the effectiveness of his use of this process, vary with the number of values among which he must identify the appropriate one?

The Contribution of Various Modes of Communication. Some aspects of the role played by verbal communication and communication of other kinds could be studied by isolating various kinds of communication.

Conditions could be arranged (perhaps by means of ear plugs, or soundproof boxes, or gags, in which verbal communication was prevented. How would such conditions affect children's behaviour and effectiveness of learning compared with conditions under which verbal communication was allowed? Again, what would be the results of taxing the resources of kinds of communication other than verbal under such conditions? Likewise, visual communication could be prevented, and the characteristics of exclusive use of verbal communication could be studied. In addition to revealing the part that visual communication usually played, this latter situation might reveal some interesting features of the limits to which verbal communication could be extended.

The subtraction of various kinds of communication from a situation would reveal aspects of the effect of these kinds of communication on learning behaviour. For example, without verbal communication, conflicts over moves might remain unresolved. Again, deprived of the verbal weapon, children who usually played a dominant role might well play such a role no longer. On the other hand, there might be a more marked differentiation of roles where verbal tools such as those used in "go-claiming" were removed.

Several experimental exercises could be carried out as a means of establishing the role played by verbal formulation of activities in the individual child's conceptualisation. For example, we could easily test whether or not certain kinds of verbalisation facilitated recall of learning situations – or, more interestingly, of aspects that were common to several different learning situations: we might compare children who had been asked to formulate aspects of the learning situation in terms of words that had been provided for this purpose with children who had not been asked to verbalise.

An assessment might also be made of the relative dominance of verbal and manipulative means of symbolising activities during the course of the children's communication in the group learning situation. It should be quite easy to devise a situation in which two alternative concepts might be abstracted from the same set of circumstances. A manipulative means of symbolising an abstraction and a verbal means of symbolising the alternative abstraction could be provided; the abstraction that was eventually made could be taken as indicating the prepotence of one means of symbolising over the other. (Naturally, conditions of use of symbol-kind would need to be equated for concept to be abstracted.) Perhaps the abstraction that was made would depend upon the purpose that the child had in mind – where, for example, the purpose was to use the abstraction in further manipulative situations, perhaps the manipulative symbolism would prove to be the dominant one, but, perhaps, where the purpose was to recall or summarise the manipulative situation, perhaps the verbal symbolism would be dominant.

The effect of prior training in both verbal and manipulative communication could be assessed in order to establish: the function of each of these kinds of communication; which would be the better kind of training in the skills of communication; which would be the more suitable for various purposes. In view of some of the features of learning situations outlined above, perhaps such tools of communication as "go-claiming" and "procedure-map" utterances could be expected to have characteristic effects.

"Communal Conceptualisation". Perhaps, where communication is facilitated by the provision of such tools, hypotheses about, for example, "communal memory", could be tested. Where children were able to communicate more effectively it is perhaps more likely that they would be able to adopt a common framework for organising the information that they derived from the learning situation, and that, within this common framework, they would be able to bring to bear the memory store of each participating child on tasks of simple recall.

It would also be interesting to see to what extent a common vocabulary would enable the members of a group to communicate hypotheses to one another when exploring the learning situation.

Recording. The role of communicative devices in the recording of operations in manipulative learning situations might be established. The preferability of certain communicative devices over others, for certain purposes, might be discovered in some such experiment as the following: three possible communicative devices, such as physical embodiment, graphical representation and verbal representation, might be compared for their effectiveness, in the group learning situation, from the points of view of the degree to which they facilitated:

1. immediate and long-term recall;
2. the use of information in solving problems.

Communication Networks. Perhaps, before the effect of varying certain of the variables in the group-learning situation is investigated, some simple descriptive studies might be carried out. One such study would be to prepare maps of the communication networks among children in the group-learning situation. For example, the number of occasions of communication from and to each child might be counted. The period of time such communications took might be measured. The distribution of out-going and incoming communications over the children of the group could be assessed. The development of sub-groups could be studied. Such communication networks could be expected to vary with various characteristics of the group learning situation, such as: size of group, heterogeneity of age and ability of children, kind of learning task, and many of the relevant aspects of group learning situations that have been mentioned in the foregoing notes.

Scanning, Sequence and Structure. A more basic kind of investigation, the implications of which might reach beyond this particular kind of learning situation and beyond learning in groups, might centre upon a comparison of a *simultaneous* presentation of information with a *concatenated* presentation of information. In turn, the concatenated presentation of information could be compared with a *sequentially-structured* presentation. The relevance of this general issue to the subject of our present concern is that a presentation in terms of an arrangement of concrete material could be conceived to be a simultaneous presentation, in the case of which the learner might be expected to be easily able to scan parts of the information in a variety of ways and from a variety of points of view. In this respect, an arrangement of concrete material could be considered to differ from a verbal presentation, for the parts of information in a presentation of this latter kind are exposed one at a time (concatenated) and in a logically-structured sequence (sequentially-structured). Where concatenated presentation is used, the scanning possibilities are restricted by the limits of the child's memory. Where a sequentially-structured presentation is involved, the scanning possibilities are restricted by both his immediate memory and his appreciation of the structure of the sequence of information. The comparison might be in terms of the following dependent variables:

1. The learner's grasp of a prescribed structure.
2. The quality and accuracy of the hypotheses the learner develops about the nature of a presented structure and the rate at which he develops them. Rate and quality might indicate the degree to which he is actively interpreting the materials with which he is presented.
3. In connection with the last point, it should be possible to devise situations in which the learner is likely to find a structure if he actively interprets, but is unlikely to find any structure *unless* he does so.
4. The degree to which the learner can recall details that are not necessarily related to any structure that the experimenter has in mind or that the learner can formulate. "Incidental learning" of this kind

may be taken as an index of a generalised tendency to engage in interpretive behaviour.

5. The effectiveness of the learner's use of the information to which he has been exposed, when asked to solve problems that test a grasp of the structure of this information.
6. The prepotence of parts of the information over other parts of the information in triggering off associations for the learner.
7. Some direct behavioural measure (in terms of threshold of distractability, etc.) of the degree to which the learner becomes involved in paying attention to the learning situation.
8. The effect, on the learner's performance in the above-mentioned ways, of degree of exposure to information. That is, how do these learning conditions affect the rapidity with which the learner must process information, and the amount of information that must be made available to him, before he can use it effectively in various ways?

NOTES

1) A more adequate idea of these can be gained from the works of Z.P. Dienes.
2) I am indebted to Z. P. Dienes for questions very much like these.
3) The likely importance of kinaesthetic images in concept-formation and of order aspects of work media has been stressed by Z. P. Dienes.

ASPEKTE DER KOMMUNIKATION IN EINER GRUPPEN-LERNSITUATION

von JOHN D. WILLIAMS, Sherbrooke

Anhand eigener Beobachtungen analysiert der Verfasser Aspekte der Kommunikation in Gruppen sechs- bis neunjähriger Kinder, die mit Hilfe von Dienes' didaktischem Lehrmaterial in die Mengenlehre, proportionale Logik, Zahlensysteme und mathematische Gruppen eingeführt wurden. – Die Beobachtungen über das Gruppenverhalten konzentrieren sich auf Struktur und Umfang der Gruppe, auf Fluktuation zwischen den Gruppen und Heterogenität der Gruppen. Dabei wird zwischen der *Teilnehmer-Haltung* (in der der Lernende seine Erfahrungen so verarbeitet, daß seine Reaktionen *artikuliert* werden) und der *Beobachter-Haltung* (in der der Lernende seine Erfahrungen in der Weise verarbeitet, daß er seine Reaktionen *klassifizieren* kann) unterschieden. Es stellt sich heraus, daß manche Kinder besser durch Imitation von Personen, die ihnen ähnlich sind (anderen Kindern), als von Personen, die ihnen weniger ähnlich sind (Erwachsenen), lernen können. – Dann untersucht der Verfasser die nicht-verbale Kommunikation und ihr Verhältnis zur verbalen Kommunikation. Dabei behandelt er folgende Themen: die Art und Weise, in der die Struktur des Lehrmaterials die Kommunikation erleichtert oder erschwert; die Rolle, die das verbale Element bei der Abstraktion

von Begriffen, zur Erleichterung der Aufstellung von alternativen Arbeitshypothesen, bei der Registrierung und in der Anregung zur Teilnahme am Gruppenverhalten spielt; den Vergleich von visueller Darbietung, in der die enizelnen Schritte "simultan geboten" werden können, mit verbaler Darbietung, in der die einzelnen Schritte sowohl "verbunden" als auch "aufeinanderfolgend angeordnet" sind; die Verinnerlichung der nicht verbalen Kommunikationsweisen. – Verschiedene Vorschläge für weitere Forschungsarbeiten über die behaldelten Zusammenhänge schließen den Artikel ab.

ASPECTS DE COMMUNICATION DANS UNE SITUATION D'APPRENTISSAGE EN GROUPE

par JOHN D. WILLIAMS, Sherbrooke

Cet article constitue une analyse – basée sur l'observation – des différents aspects de communication qui eut lieu dans des groupes d'enfants de 6 à 9 ans, étudiant à l'aide de matériel didactique inventé par Z. B. Dienes, les ensembles, la logique propositionnelle, les systèmes-nombres et les groupes mathématiques.

Les observations relatives au comportement en groupes se concentrent sur la structure et la grandeur du groupe, le passage d'un groupe à un autre et l'hétérogénéité des groupes. L'auteur distingue entre *le comportement des participants* (où l'élève organise son expérience d'une telle manière qu'il *articule* ses réponses) et *le comportement des observateurs* (où l'élève organise son expérience d'une telle manière qu'elle lui permet de *classer* ses réponses). Il peut constater que les enfants sont capables – sous certains rapports – d'apprendre mieux en imitant des personnes qui leur sont semblables (d'autres enfants par ex.) que des personnes qui leur sont différentes (des adultes par ex.).

L'auteur examine ensuite la communication non-verbale et son rapport avec la communication verbale, en étudiant les sujets suivants: les manières dont la structure du matériel didactique peut faciliter ou entraver la communication; le rôle de la verbalisation dans l'abstraction des concepts pour faciliter la production d'hypothèses alternatives, pour enregistrer et pour favoriser la participation au comportement du groupe; une comparaison des présentations visuelles – les composants sont "simultanément disponibles" – avec des présentations verbales – où les composants sont à la fois "liés" et "structurés d'une manière continue"; "l'internalisation" de communications non-verbales.

L'auteur présente enfin plusieurs suggestions d'études de recherche relatives à ces observations.

ETIOLOGY OF SCHOOL BACKWARDNESS

by JAN KONOPNICKI, Cracow

School backwardness is one of the main social calamities of our time. Increasingly frequent attention is drawn to it, even by laymen, who demand that educational authorities take steps to avert the serious effects suffered by a large percentage of pupils. The percentage presented in various statistical studies is alarming, even though it is generally considered to fall short of the real figure of those pupils whose retardation is in no doubt.

It is possible to distinguish three aspects of the social danger of school backwardness. They are: educational, economic and psychological. the danger is no less complex than is the problem itself; thus either underestimation or overestimation of any of these aspects may prove to be as disastrous as neglect of the whole problem. The problem is important, not only because it already causes much trouble in the work of schools – for example, the necessity for recognising great individual differences between children – but also for the future. It may be said that gaps in children's knowledge are not so important as their social and psychological consequences.1)

Gaps in pupils' essential knowledge result in ignorance and dilettantism which are undoubtedly reflected in the quality of their future work. To overcome this is extremely difficult, because we usually know little about these gaps, and sometimes even do not want to know, being content with appearances. Examinations carried out from time to time show us the nature of the problem and then we usually start looking for the causes of such a state of affairs – but not for long, however.

The same may be said about the psychological effects. Lack of success in learning, just like the lack of any other success, cannot stimulate children to further work. On the contrary, it usually stifles any desire to renewed efforts, and leads to a reduction in the effectiveness of their work. If the lack of success lasts too long without our counteraction, its effects will be lamentable not only for the individual but for the whole society.

School backwardness is a process which, if it is allowed to develop, can lead to catastrophe for an individual. As a process it comprises certain phases. No wonder that the main examiners of the problem – Wincenty Okoń and Czesław Kupisiewicz, as well as the author of the present article, recommend various remedies according to the phase in which the pupil finds himself.

On the basis of research into groups and individuals, the author distinguishes four phases in this process.

In the initial phase of retardation the first gaps in the pupil's knowledge appear imperceptibly. The first symptoms of the child's discontent with school become apparent. They usually appear because the pupil does not understand a problem discussed during the lesson, cannot follow its course, and for the first time in his life finds out that the others are better. This state of affairs may be hidden not only from the teacher or parents, but also the child himself may not understand why he has come to dislike school. As the curriculum is based on the principle of grading difficulties, the gaps increase until some more evident psychological symptoms appear. First it is lack of interest in the lessons, then – as its consequence – lack of the desire to learn.

A negative attitude by a pupil towards learning and school in general is a symptom which should never be neglected. A natural tendency to seek comfort makes us overlook it.

The second phase of retardation is characterised by severe shortcomings, noticeable by the fact that even with the best of intentions a pupil cannot participate in school work or profit from it in a normal way. He resorts to all possible ways of cheating, the most important and symptomatic of which is the copying of homework and classwork. The first phase is characterised by the child's dislike of school, the second is evidenced by avoidance of any independent fulfilment of tasks. Teachers are often ignorant of this phase as well. In diagnostic studies in arithmetic and in the Polish language it has been noticed that the greatest number of mistakes has been made by the best pupils, which turned out to be a complete surprise for the teachers. Wincenty Okoń calls each of these phases "a period of hidden school backwardness".2)

The third phase is characterised by the occurrence of unsatisfactory marks. At this stage everybody knows that something is wrong with the pupil. Then the first official attempts to solve the problem can be seen. As the attempts are not always appropriate, failure deepens and once again some psychological symptoms appear; now, however, they are more advanced. From the point of view of the pupil's attitude towards his environment, i.e. teachers, parents and his fellows, the symptoms are either positive or negative. They are positive when a child shows its conflicts overtly in an open fight. This can be either a revolt against authority, or rowing, improper behaviour, clowning, teasing of friends and making trouble for the teachers. They are negative when a pupil withdraws from active participation in the life of the class as a result of his constant lack of success and shrinks into himself. He finds expression in dislike of school, which most often leads him to play truant and to various forms of negation in the course of his school work. An attitude becomes apparent which is usually called lack of self-confidence and of persistence, together with complete indifference to school.

The fourth phase is what we call non-promotion. It is a formal affirmation of failure of all attempts to eradicate backwardness. Quite often the pupil is then on the verge of going astray. At this stage people from outside, not only teachers and parents, should be engaged in curing such an individual.

The above remarks show that the identification of failure at its onset is absolutely necessary. Awareness of which phase of the process the pupil is at any moment experiencing should facilitate remedial action. Errors in this respect are costly for the whole society.

Just as one cannot cure an illness without having a proper diagnosis, we cannot effectively cope with the problems of failure unless we know the reasons for them. This leads to the necessity for identifying the cause of the failure.

The causes are analysed in two ways in educational sciences, i.e. education and psychology. One way is to carry out surveys in order to find out which conditions or groups of conditions are the cause of failure. Then the results are subjected to statistical analysis. The second way is to analyse particular cases – i.e. make case-studies.3)

The first way provides us with a general idea and makes it possible to choose the mass remedial media. It enables the teacher to view a pupil clearly against the background of big groups. The second way is an individual activity with an individual therapeutic aim.

Both ways should supplement our information about the problem and the pupil. It is obvious that we ought to know the possible causes of school backwardness before we proceed to use this knowledge in solving individual problems and overcoming individual difficulties.

In connection with this, on the one hand we can note intellectual, social, economic and school causes and on the other, dominating, supplementary, direct and indirect causes. A direct or immediate cause is one which is easily noticed; an indirect cause is one which can be discovered only after having applied scientific methods.

Individual analysis is helpful in dividing causes into dominating and supplementary ones.

There are no situations in which one factor only could be pointed out as a cause of a failure. For instance, inappropriate methods applied to a pupil of poor abilities prevent him from active participation in school work because he has not a clear understanding of its course. The result is lack of concentration, and later on, a sense of inferiority arising from constant lack of success. All this may end in serious disturbances in behaviour, sometimes even of a neurotic character. Even a thorough individual analysis may fail to reveal what the first, immediate or main causes have been in the case under examination. Analysis of particular cases provides evidence of the existence of numerous causes so closely connected that it is practically impossible to consider them separately. From the point of view of school backwardness we can only speak of the dominating cause, that is the one which plays the most important part in producing a failure.

Identifying the underlying causes is the first and one of the most important stages of overcoming failure.

Defining the causes of school backwardness is extremely valuable. While at the first two stages it is enough to fill the gaps in the pupil's knowledge, at the next two stages the remedial means are dependent on the nature of the causes, the simple elimination of gaps being insufficient.

Methodological approach to discovering causes is twofold and complementary, the methods being by surveys and case-studies, as has been stated above.

The problem of causes underlying failure has been dealt with by research workers and by teachers. Their studies have covered more or less numerous groups of children and have been mostly of a fragmentary character, reaching conclusions which are rather tentative.

The following is an analysis of two large-scale complementary studies. One of them (of long standing) is based on detailed, all-round observation of children. It comprised 150 cases in the experimental dayroom in Wrocław. The second comprised 1235 cases in the same place.4)

The first is a case-study. It resulted in identifying the cause of the failure and the disturbance in behaviour connected with it. Many examinations were carried out during the period when the pupils were under educational and psychological care. Observation lasted from three weeks to several months. Thus the identification of the causes underlying school backwardness can be considered to be valid.

The second group, which can be treated as a control, was examined by intelligence tests. The results of testing, together with the material obtained through background inquiries, formed the basis for stating the supposed cause of the pupils' lack of success. The results obtained were strikingly similar, and the percentage deviations were slight. Let us consider the types of these causes in both of the studies mentioned above.

Lack of ability on the part of the pupil has up to now been considered to be the most important cause of school backwardness. Next came

TABLE

	Study 1 No. in group: 150 %	*Study 2* No. in group: 1235 %
Lack general abilities	10	13
Lack special abilities	6	4
No parental care	35	25
Poor parental care (inefficiency)	2	–
Faulty educational methods on the part of the parents	12	15
Atmosphere at home	15	10
Financial conditions	2	4
Faulty methods of instruction on the part of the teachers	10	16
Other	8	13
Total	100	100

pedagogic deficiencies. Then, shortcomings of environment. The above-mentioned and much other research has not confirmed the prevalent opinion. It is certain that the intellectual level of the pupil, the methods of instruction, and many other school deficiencies are causes of school backwardness. However, they affect fewer pupils than had been imagined. On the other hand, home conditions, comprising about 67% of cases in the first study, seem to be of the greatest importance.

When we analyse the special and intellectual causes, comprising 16% – 17% of all cases of retardation, we arrive at the following conclusions:

1. Low intellectual level of pupils, no matter whether measured by Terman-Merrill tests or on the basis of teachers' opinions, is the dominating cause of school backwardness in so few cases that the prevalent conviction that intellectual deficiencies are decisive in this respect is not justified.
2. Reliance on IQ is not sufficient nowadays; thus the use of verbal tests is of much help to illuminate the problem, but not to form a diagnosis.
3. Teachers' opinions of a pupil's capabilities are in agreement with the results obtained by means of verbal tests. It seems, however, that both the Terman-Merrill scale and Wechsler's verbal scale measure what Alexander calls g + v, which is reflected in the degree of mastery of the mother tongue and mathematics as well as other subjects. The pupil's achievement is noticed and properly estimated by the teacher. It is, however, beyond the scope of his observatoin to notice other achievement.

4. The fact that the school does not always notice non-verbal abilities or the lack of them, leads to the improper organisation of pedagogic work in school and results in school backwardness for some of the pupils. This cause of retardation is only seemingly pedagogic.
5. Out of intellectual deficiencies "slowness in thinking" should be brought into relief, which need not correspond to mental handicaps or limitations.

Social and emotional causes of school backwardness form the main group. It should be noted that emotional causes are most often the effects of social ones.

In the search for social causes we first of all draw attention to the organisation of the child's environment. Lacks and deficiencies in a child's educational environment either militate against forming his social attitudes or contribute to the formation of anti-social ones. The lacks and deficiencies which are the real social causes of retardation are thus presented in our research:

1. Broken homes with their most dangerous phenomenon – bad married life of the parents. One third of all the cases of social causes belong to this group. Here belong the children of legally disunited families where one of the parents is absent as a result of a divorce, and of families with unsatisfactory conditions of family life, even more perilous than the formal division of the family. The correlation between formal or informal divorce and the lack of desire to learn on the part of the child is much lower than the correlation between unsatisfactory conditions of family life and the lack of the desire to learn. The conclusion can be drawn that the atmosphere at home is more fully reflected in success or lack of success of a child than is the lack of a parent. Orphans or half-orphans do not belong to this group, since they form a different problem.
2. The second big group of cases is formed by the children coming from homes in which no positive educational influence is exerted by the parents (more than 50%). It is reflected in
   a) indifference to the child's learning at school;
   b) leaving a child to itself, providing merely formal or verbal care;
   c) indifference of parents to school.

   What seems to be characteristic is that only 25.8% of parents work (the second group merely is taken into consideration). In 69.1% only the father works, and in 5.1% – only the mother. Thus, lack of interest in a child cannot be explained by professional work. Parents of this kind are unfortunately numerous, and the educational influence of school upon them is slight. These parents try to avoid school by all means and do not participate in any educational courses or lectures.

3. The third group of children suffering from social causes is the smallest (16%), but the most dangerous. These are the children who are demoralizingly influenced by the parents. Here comes alcoholism, rows and other excesses on the part of the parents, which must have a negative effect on the work of the child. It is interesting that the percentage of orphans is small here. The same can be stated of children from broken homes. In the third group we often come across the so-called "changing families", where nobody is interested in formalisation of a temporary liaison. Among these families there are those whose family life is unknown not only to the school but even to their neighbours. This group of causes have a negative influence. Neither psychological nor educational means are effective here. Children of this group should be taken from their homes before they go astray. School causes of retardation can be divided into organisational and pedagogic ones.

The latter are ascribed to the teacher, to his methods of instruction or to the deficiencies of certain subjects. Most important here are arithmetic and silent reading comprehension. Diagnostic studies in arithmetic prove that a pupil does not gain clear notions in the course of instruction and does not meet standards of mathematical thinking appropriate to his age and to the requirements of the curriculum. Problems are often solved without understanding by means of guessing, false thinking or on the basis of learning by heart. One research work showed that gaps in essential knowledge are reflected not only in learning mathematics in secondary schools, but are also evident in students of mathematics in colleges. Gaps in essential knowledge which are the result of improper instruction are the cause of future retardation not only in mathematics. One can say that they are proto-causes of school backwardness. Lack of thinking is especially evident in the method of solving textual problems. High correlation coefficients (0.48–0.80) between the results of solving problems and the scores of an A14 test prove the lack of development in pupils' mathematical thinking. Results in both studies were rather poor. It seems to be characteristic that a pupil doing well in the first, usually does well in the second and vice versa.[6])

The same can be stated of the lack of comprehension in silent reading. Research proved that:

1. Pupils work unequally and differences between them are immense. This is evident both in the results of case-studies and in complete

counts of surveys. It is difficult to state for certain how long pupils concentrate in the course of reading. Approximate data at our disposal prove that the situation is not at all good and that concentration of attention is unsteady. Periods of concentration are short, while breaks between them are much longer. Obviously, this kind of reading never gives satisfactory results. This is the cause of poor achievement in all areas in which reading is necessary. The poor results are ascribed to various factors – mostly it is the teacher who is blamed but no one notices that a pupil simply cannot concentrate on the text.

2. Research has proved that the only pedagogic means we can use is to notice the moment at which the pupil stops concentrating on the text. Knowing a pupil in this respect may prevent both later retardation and a complicated search for its causes. The skill to concentrate is not inborn, it can be acquired through exercises. School does little to participate in this process, based on an unexpressed assumption that a child will somehow get along.

General conclusions which can be drawn from studies and researches carried out at various times are the following:7)

a) Causes of school backwardness are complex and appear in the following pattern: one or two dominating causes, and a number of secondary, additional ones. It often happens that one cause results from another. Lack of differentiation between causes leads to grievous errors. Mistaking a secondary cause for a dominating one contributes to the eradication of failure but not vice versa – it can even increase it. The necessity for identifying the dominating cause should never be underestimated, since any therapeutic action ought to begin with its eradication.

b) The statement that school backwardness is a process consisting of certain phases is of great importance for its future elimination. In each of the phases other causes appear as dominating. The first two are of a pedagogic character, while the remaining two are psychological. No data at our disposal enable us to state to what sort of change the causes are subjected in the course of the development of retardation. The lack of useful data results from the fact that we usually notice failure when it is much advanced. Case-study, however, shows that some changes occur.

c) Analysis of causes is carried out on the material of case-studies or surveys. The former help us to acquire a general idea of a problem as a whole and allow us to modify the organisation of our pedagogic work, while the latter are merely the key to individual problems. No justification is needed for the necessity to carry out case-studies. From the

scientific point of view both of these methods should be complementary.
d) Research has proved that a general – a common sense view – may be feeling fallacious in approaching the problem of causes of school backwardness. This is due to the fact that these approaches sometimes reflect wishful thinking and not an objective reality.
e) Considering intellectual factors to be the main cause of retardation is an expression of general feeling. Case-studies and surveys deny this conclusion.
f) Home circumstances and conditions of family life prove to be the main evildoers. The necessity for closer relations between home and school can be stated as a conclusion drawn from this statement. Modification of educational courses for parents should immediately take place.

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ÄTIOLOGIE DES VERSAGENS IN DER SCHULE

von Jan Konopnicki, Krakau

Der Verfasser behandelt das Versagen in der Schule als einen Prozeß mit vier Stadien. Im ersten Stadium machen sich Lücken im Wissen des Schülers bemerkbar und dieser stellt fest, daß andere Schüler besser sind als er. Im zweiten Stadium werden die Wissenslücken so groß, daß er mit den Mitschülern nicht mehr Schritt halten kann, und er wendet sich verbotenen Hilfsquellen zu. Im dritten Stadium sind die Noten des Schülern ungenügend, ein Zeichen, daß der Lehrer sein Zurückbleiben erkannt hat. Im vierten Stadium muß der Schüler eine Klasse wiederholen, was dazu beitragen kann, ihn vollends zu entmutigen – Die Ursachen für das Versagen in der Schule sind vielfältig und komplex. Der Verfasser unterscheidet zwischen Ursachen intellektueller, sozialer, gefühlsbedingter und schulischer Art. Ihre jeweilige Bedeutung kann stärker oder geringer, direkt oder indirekt sein. – Allein ein rechtzeitiges Erkennen des Versagens kann grundlegende Abhilfe schaffen. Zu diesem Zweck können sowohl langfristige Untersuchungen über die Entwicklung des Wissensstandes der Schüler als auch Fallstudien durchgeführt werden. – Der Verfasser berichtet über die Ergebnisse von Forschungen dieser Art über Fragen des Schulversagens, vor allem der umfassenden Untersuchung über eine Versuchsgruppe von 1235 Personen und von Einzeluntersuchungen an 150 Personen. Eine Charakteristik der vier erwähnten, bei Schülern festgestellten Ursachen schließt den Artikel ab.

L'ETIOLOGIE DES ECHECS SCOLAIRES

par Jan Konopnicki, Cracovie

L'auteur traite de l'échec scolaire en tant que processus et se composant de quatre phases. C'est dans la première phase qu'apparaissent les lacunes dans les connaissances, et c'est alors que l'élève constate que les autres sont meilleurs que lui. Dans la seconde phase, les lacunes deviennent si importantes que l'élève ne peut plus suivre les autres, et il profice d'une aide défendue. Dans la troisième phase, l'élève reçoit des notes insuffisantes, ce qui prouve que le maître s'est aperçu de son retard. La quatrième phase, c'est le redoublement de la classe qui peut contribuer à dérouter l'enfant.

Les causes d'insuccès sont nombreuses et complexes. L'auteur distingue les causes d'ordre intellectuel, social, émotif et scolaire. Chacune d'elles peut jouer un rôle prépondérant ou secondaire; direct ou indirect.

C'est la détection précoce de l'insuccès qui permet d'y remédier radicalement. A cette fin, on peut se servir des recherches sur les connaissances scolaires effectuées sur une grande échelle ainsi que l'analyse des cas individuels.

L'auteur présente les résultats de ces deux recherches relatives à l'échec, notamment la recherche collective sur un échantillon de 1235 personnes et une recherche individuelle sur 150 personnes. Ensuite, il caractérise les quatre catégories des causes énumérées ci-dessus et qui ont été constatées chez les élèves.

INSTRUCTIONAL AGENTS AS TRANSMITTERS OF RESEARCH FINDINGS

by John D. Williams, Sherbrooke

Introduction

In this paper we shall examine factors bearing upon the effectiveness with which various instructional agents can help to implement the findings of educational research. In doing so we shall compare the human teacher with certain inanimate rivals which can control the learning situation and which therefore might be used to implement research findings.

It would probably be accepted without question that research findings *should* be allowed to influence the pupil's learning experiences – although even this supposition could usefully be qualified: it may be suspected, for example, that research is, or could become, out of touch with the learner's needs and that into the need-research-implementation system there should be built some device for guaranteeing the relevance of educational research to these needs. However, assuming that it is desirable to know how situations should be contrived in order to maximise the effect that educational research findings can have on the pupil's learning experiences, we should acknowledge that the present state of affairs is unsatisfactory, and that we should be devoting considerable attention to an examination of how the implementation of research does or could take place.

It is probably quite widely assumed that the main intermediary between the research worker and the pupil is the teacher. Perhaps this is so, but, possibly, while there are kinds of research and learning situation for which the teacher can function as a very effective mediator, there are also kinds for which other agents would fill this role to greater effect. By comparing the teacher with other agents, we hope at least to bring some usual assumptions into question – and perhaps to indicate some ways in which certain of the problems in the area might be solved.

The paper will be in four sections:

- A brief presentation of the factors that might be expected to affect the efficiency of a transmitter of research findings. This will be in order merely to orientate the reader by providing him with some kind of framework in terms of which to interpret the the comments that will be made in subsequent sections, where a fuller picture of the nature of these factors will emerge.
- An account of some of the aspects of the learning situation that might be affected by research findings. Clearly the kinds of research finding that an agent can transmit will depend upon the degree of control that it exercises over those aspects of the learning to which these kinds of finding might relate.
- A classification of certain of the findings of educational research; the purpose of this will be to make clear what it is that is being transmitted.
- A comparison of several instructional agents which can be used for controlling learning situations and which therefore might exercise control in such a way that they implement the findings of educational research. We shall compare these in terms of the kinds of finding

that they are suitable for transmitting, the aspects of the learning situation that they are suitable for controlling and some factors that tend to determine both the degree of transmission and the kinds of finding that are transmitted. We have chosen to consider the following agents: the conventional textbook; the film; "manipulanda" (that is, devices that the learner can manipulate with relative freedom, such as tape recorders and mathematical apparatus, and which can provide him with feedback relating to the success of his manipulation); programmed instruction; the human tutor. This is by no means an exhaustive list of the agents that deserve consideration, but it will be suitable for bringing out some of the more important points that can be made about the transmission of research findings.

Factors that Might be Expected to Affect the Effectiveness of a Transmitter

As will become more apparent when we examine particular agents, it is possible to isolate certain important determinants of the effectiveness with which these agents are able to transmit research findings. We shall briefly consider five such determinants here, but others and other aspects of these will come to light when we unfold some of the complexities of transmission in subsequent sections.

- *Control of Aspects of the Learning Situation.* In the section which follows this we shall examine in detail some of those aspects of the learning situation to which research findings might have relevance and which instructional agents might control with varying degrees of effectiveness. Here we shall merely point out the *importance* that attaches to the effectiveness with which an agent can control such aspects.

  The aspects that we shall consider in the next sections are: the structure of the subject-matter to be learnt; the sequence in which parts of it are learnt; the embodiment of this subject-matter; pacing; accommodation of the learner's responses; responsiveness of the agent to the learner's behaviour.

  Since the relevance of many of the important findings of educational research is dependent upon the particular form taken by certain of these aspects of the learning situation, an agent which can control these aspects will be of more use in transmitting research findings than one which cannot. Moreover, the kinds of research finding that an agent can transmit will depend upon the kinds of aspect that it can control.

  As will be seen in the next section, the last two aspects in our list are of special importance, for where an agent is able to accommodate the learner's responses and, in turn, respond to his behaviour, it is in a particularly good position to transmit research findings.

- *Ability to Adjust to Teaching Aims – "Improvability"*. Certain of our agents lends themselves more readily than do others to improvement by experience. For example, the human teacher or the teaching machine both accept and are capable of registering feedback from the learning situation. This feedback might be used for purposes of modifying the agent in the direction of certain instructional policies. Since such instructional policies may be determined by research findings, this kind of "improvability" makes it possible for these agents to adjust their behaviour in such a way that it will embody research findings.

  But improvability brings with it a more powerful advantage than this. Where an agent is amenable to improvement, it can adjust its instructional behaviour to the requirements of the learner and the learning situation – rather as a general principle or a theory might be adjusted to the outcome of experimentation. Thus, there is a sense in which an improvable agent can be said actually to *carry out* research. One could say, in this case, that the agent embodied rather the *method* than the *findings* of educational research.

  Continuous with this is the case in which the agent can be said to embody the *findings* of educational research, in that these findings are used to determine the *dimensions* along which the agent adjusts to the learning situation. For example, it might be known, from educational research, that the degree to which the learner is allowed to discover for himself the concepts that he is meant to acquire is an important variable in the learning situation. An improvable agent can be set to vary the degree of discovery-learning that is required of the learner, and thus to find out which degree is the most effective.
- *The Ability to Adjust to the Learner and the Learning Situation-"Adaptability"*. It is very unusual that a finding of educational research can be legitimately framed in the form of a simple categorical teaching directive. More often, findings will be in the form of directives that apply only in relation to various characteristics of the learner and of the learning situation. Unless an agent is able to adjust to the particular requirements of a learner or a learning situation, it will not be able to transmit findings that are framed in such relative terms.
- *Amenability to Standardisation.* Where an agent has been designed for the transmission of research findings, it is important that the behaviour of this agent should be standardised so that we can specify the precise conditions under which these findings are transmitted.

Certain of the more flexible of the agents under consideration – the human tutor, for example – are notoriously resistant to standardisation. Consequently, while the behaviour of such agents may well be in compliance with research findings, we cannot *guarantee*, in any particular case, that it will be.

One of the great advantages of an agent that is standardisable arises where we can "tune" it, rather as one would tune an engine, in such a way that it is likely to work successfully in a particular kind of learning situation. We can then be confident that on future occasions the behaviour of this agent will embody a compliance with the requirements to which we originally tuned it. The opportunity to "pre-set", empirically, in this way, the conditions of operation of an agent may be very necessary in education. In this discipline we have only a very primitive knowledge of the variables that influence the effectiveness of the learning situation, and it is questionable whether we are in a position to interpret the significance of many research findings – let alone to manage with much effectiveness to implement them.

But, even in cases in which we have a fairly good idea of the nature of the relevant variables, there remain difficulties. To the present writer it seems that a major obstacle to the communication, and, hence, implementation, of the findings of educational research is the fact that these findings tend to be formulable only in terms of sets of *optima* – not in terms of unitary *maxima*. In the case of most of the variables that we investigate and which we believe to determine the effectiveness of learning situations, we find that the best results are obtained at certain optimal levels of these variables. For example, we might find that the learner will perform best not when he is under-anxious, neither when he is over-anxious – but when he is just anxious enough. These optima are, in turn, determined by the levels of several other variables. For example, the placement of the optimum for the learner's anxiety might depend on his intelligence, the complexity of the learning task, and other components of the learning situation. Whereas, in order to express or understand *maxima* we need merely to refer to the *direction* or a scale, in order to express *optima* we need to refer to particular *positions* on a scale. Instead of prescribing for the learning situation "as much as possible" of a certain ingredient, we must prescribe a particular dose – and, what is more, the size of this dose will depend upon the degree to which other ingredients are present. Hence, the implementation of our findings requires that they should be formulated in an intricately quantitative form and that in the application of these findings the learning situation should correspondingly be characterised in detailed and quantitative terms. To cut a long story short, we can say that in education, quantification of this kind is a long way off.

Now the need for communicative vehicles that are suitable for this complex quantitative formulation of research findings is obviated where we can experimentally "pre-set" the agent that controls the learning situation so that all relevant variables which might determine the effectiveness of this situation are placed at optima that have been found empirically to produce the best results.

- *Replicability.* Where it is possible to replicate an agent that has been designed or adjusted for the transmission of research findings, its power as a transmitter will obviously be amplified. Replicability pre-requires amenability to standardisation but also depends upon certain other characteristics which would determine the expense, and hence the practicability of replication. For example, learning conditions could be controlled by an agent that consisted of an expensive assortment of teaching gadgets which might be set to embody certain research findings in a standardised way, but conditions controlled by this kind of agent could not be replicated quite so readily as would be possible were they controlled by such an agent as the textbook, which is relatively cheap to produce in large quantities.

We could liken the replicability of a "tuned" set of learning conditions to the generalisability of a principle of learning or a theory. Replication of this kind enables us to generalise to many situations the information embodied in a particular set of learning conditions.

Aspects of the Learning Situation that Might be Affected by Research Findings

The effectiveness with which research findings can be implemented by a particular agent might be expected to depend upon the aspects of the learning situation which this agent can control.

In this section we shall list some aspects of the learning situation in terms of which we shall subsequently consider the effectiveness of various agents.

- *The Structure of the Subject-Matter to be Learnt.* The importance of this aspect of the learning situation varies a great deal with different subject-matters. In the case of the more highly-organized subject-matters, such as mathematics and science, a great deal can be gained by an analysis of the logical structure of the material to be learnt and by the presentation of this material in a form that complies with such an analysis. However, it is not usually sufficient to carry out merely a *logical* analysis, for many psychological considerations will bear upon the nature of the structure that is optimal for efficient learning. Obviously, a transmitter which will make it possible for our knowledge about both the logical and the psychological requirements of structure to be met in our presentation of learning material will contribute considerably to the success of the learning situation.

- *The Sequence in which Material is Learnt.* An essential aspect of the structuring of the material to be learnt is the sequence in which the learner masters its parts. There is good reason to suppose that in many cases there is an optimal sequence for the presentation of material, and that the learner is unlikely to be able to discover this sequence for himself. Research techniques can be used both to establish empirically the optimal sequence in a particular case, and to discover the principles governing such optima. Some agents are more effective than others in enabling research findings to inform the order in which the learner *encounters* the material to be learnt, and some are better able to ensure that this will be the order in which he *learns* it.
- *The Embodiment of the Subject-Matter to be Learnt.* An important aspect of the learning situation are the means used to communicate subject-matter to the learner. We shall call such communicative devices (words, diagrams, apparatus, etc.) the "embodiment" of the subject-matter. We know for certain that the manner in which certain kinds of material are embodied can affect the success with which they are learnt. Although a great deal of work remains to be done to establish how particular aspects of the embodiment of learning material affect the effectiveness of the learning situation, we are already in a position to improve this effectiveness by controlling embodiment. We have established, for example, (we might have known by common sense) that considerable benefits can derive from the use of films for the dynamic presentation of certain parts of geometry and from the use of tape recorders for the presentation of the spoken word in the teaching of foreign languages. Clearly, only certain kinds of agent could provide us with the facilities for exploiting this knowledge.
- *Pacing.* Some agents necessitate that the learner should encounter material at prescribed points in time, others allow him to determine for himself the rate at which he encounters the material, while yet others are capable of adjusting to what have been demonstrated to be his pacing requirements. Hence, different agents offer in different ways and degrees the opportunity for research findings to affect this aspect of the learning situation.

- *Accommodation of the Learner's Responses*. Many of the more realistic of the findings of research into learning relate to situations in which the learner is allowed to respond to a stimulus, and in which his response is likely to affect the nature of subsequent stimuli. Agents vary in the extent to which they permit the utilisation of information about the learner's responses, and, consequently, in the degree to which they can help to implement research findings of this kind.

  In addition to this, accommodation of the learner's responses is an important factor in the "improvability"of an agent – for, where the learner is allowed or required to respond, his responses can act as feedback which can indicate to the agent to what degree it has succeeded in attaining its instructional objectives. This, in turn, adds greatly to the agent's power to implement a wide range of research findings.
- *Responsiveness to the Learner's Behaviour*. Usually, the most effective learning situation will be one which responds to the learner's behaviour. This may occur in any of several ways: the agent controlling the situation may choose from a range of materials those kinds that are suitable for the learner to encounter at a particular point, it may give the learner knowledge of the results of his efforts to use the material that he has learnt, or, as indicated above, it may vary the rate at which material is exposed to the learner. Where this facility of responsiveness is available, those important research findings that involve this facility can be transmitted.

  Like the ability to accommodate the learner's responses, responsiveness to the learner's behaviour is an important ingredient of "improvability", for a responsive agent is able to "try out" improvements during the learning process. Consequently, responsiveness of the agent is able to contribute in *this* way, too, to effectiveness in transmitting research findings.

The Products of Research

A particular research finding may be more readily transmitted by some agents than by others, and an agent may transmit some kinds of finding more readily than it transmits others.

For this reason it will be useful to classify research findings. Here we shall limit our interest to those findings that relate directly to the learning process. It will be convenient from the point of view of our present concern to place them into three categories:

- *The Hard Fact*. This consists of the kind of information that is usually framed in concrete terms and at a relatively low level of generality.

For example: "Children at the age of seven years find it easier to learn place value if they use squared rather than lined paper". Because this information refers directly to specific teaching circumstances, it is readily interpreted by the teacher. However, for the same reason it must be relatively limited in its application. We are at this point reminded of one of the dilemmas of research implementation: information that is easy to interpret is likely to be of narrow relevance.

- *The General Principle.* Here, information is conveyed by means of a statement which is of a relatively high level of generality, and, in many cases, a statement the interpretation of which is conditional upon assumptions that are not made explicit. Such statements can be very misleading if not used with caution. They require much supplementary information before the teacher (or other agent) is in a position to interpret their meaning in any particular context. For example: "learning by discovery is more effective than guided learning". The applicability of such a statement may depend upon characteristics of the learner, or of the material to be learnt, upon an interaction between these, or upon many other features of the situation in which the statement might be applied. The constraints to be placed upon the scope of the application of such a statement must be worked out by the teacher or whoever delegates the implementation of the finding to an alternative agent.

  As its name implies, the general principle is much wider in application than the hard fact – but there is correspondingly greater opportunity for it to be misapplied.
- *The Theory.* In some senses it can be said to be illegitimate to distinguish the theory from the general principle. This is particularly so in education, where there is not a sufficiently elaborated or accepted system of theoretical constructs to permit theoretical formulation in ways that are characteristic of the more mature sciences. However, we could say that whereas the general principle both applies to facts and takes support from them relatively directly, the theory – even, in some cases, in education – consists of a set of suppositions that are likely to relate to any particular set of facts only after a considerable amount of interpretation has been carried out: interpretation which sometimes involves the assumption of rules of inference that are not considered to be a necessary part of the theory and which would not necessarily be involved in the case of every one of its applications. Piaget's model of the learning process as a combination of *assimilation* (the fitting of experience to those conceptual categories that the learner already possesses) and *accommodation* (modification of the learner's

categories so that it will be possible to fit to them learning experiences to which the previous form of the categories was unsuitable) can be regarded as a kind of theory.

The theory is likely to be more versatile than the general principle, but at the same time the manner of its use and its implications for teaching are likely to be even *less* obvious. However, it should be stressed that the theory is most certainly a vehicle that can convey information from the research worker to the teacher or other agent of transmission – and there is something to be said for considering it as one of the most important of the available vehicles. In addition to providing a kind of summary of facts, the theory – to a greater degree than do the other vehicles of information we have considered – affords the teacher a kind of "calculus" for arriving at conclusions based upon the facts that he encounters himself.

It can be appreciated that the form in which information reaches the teacher or other agent will affect the kind and degree of use that can be made of it, and hence the effectiveness with which it is implemented. However, the effectiveness of implementation is also likely to depend upon the agent that is involved. In the next section we shall see how the form in which information is transmitted interacts with characteristics of the agent that acts as transmitter.

Comparison of the Teacher with Other Kinds of Transmitter

We shall now compare agents in terms both of the kinds of research finding that they are suitable for transmitting and of the aspects of the learning situation that they can bring into conformity with research findings.

We shall concern ourselves with the human teacher together with four other kinds of teaching agent. We shall consider these in the approximate order of the number of facilities for the implementation of research findings that they appear to offer. We shall see how these facilities are determined by those factors outlined in an earlier section – namely: degree and kind of control; improvability; adaptability; amenability to standardisation; replicability.

- *The Conventional Textbook.* In this case we are talking about an instrument, the details of the nature and uses of which are determined to some extent by tradition. It has a great deal more potential than it is usually given credit for, and than is usually realized. We shall refer to textbooks as they are, rather than as they might be.

  The textbook is good at preserving the structure of the material to be learned, but is not as good in this respect as it might be, for it cannot exert a very rigorous control over the sequence in which the learner masters or even encounters the material that it contains. Again, it cannot control the timing of the presentation of learning experiences, and, by comparison with some other agents, tends to allow very little scope for the embodiment of the learning content. To a limited extent it can be made to accommodate the learner's responses, but is not adequate – in its conventional form – at providing feedback to inform the learner of the effectiveness of these responses.

In the writing of the textbook the author can certainly make use of a knowledge of psychological principles and theories – and certainly the construction of a textbook can embody some of the hard facts of research. However, in the form in which textbooks are usually produced they are not improvable to the same extent as would be an agent which could more readily accommodate the learner's responses. As we have already pointed out, this is because such an agent can use these responses as feedback to indicate the degree to which it is achieving its instructional objectives. Where an agent is not readily improvable, it is more difficult to ensure that this agent will be effective in transmitting research findings. An important merit of the textbook is that it is readily amenable to replication, and, consequently, where this agent *does* transmit research findings, it can do so on a large scale.

- *The Film.* As in the case of the textbook, this can be used to determine the structure of the material to be learnt. It can go further than the textbook towards ensuring that material is learnt in a structured way, for it can control the sequence in which material is encountered. However, it cannot control the order in which the learner *masters* material.

It can be used to pace learning – and, under usual conditions, *must* be used in a manner which paces learning. It may seem that where a device ensures pacing, it will at the same time ensure that research findings that relate to pacing will be communicated to the learning situation. However, very seldom would research prescribe a *particular* pace learning any subject-matter – for the desirable pace at any one point would usually be at least partly contingent upon various aspects of the degree to which the learner had already mastered previous parts of the subject-matter. Therefore, although the amenity of pacing is provided by the film, the value of this amenity is diminished by the fact that the film cannot usually adjust its pace in the light of the learner's responses. This is because it lacks another of the amenities which we considered in the section above – that of accommodation of the learner's responses.

The respect in which the film is superior to most other devices is that of the embodiment of content. Its superiority derives largely from the fact that it can communicate *movement* – which enables it to present a vast range of highly concrete situations.

Being unable to accommodate the learner's responses, the film is unable, in turn, to respond to the learner. In its simpler and more common forms it can neither provide the learner with feedback nor alter its course in relation to the learner's needs. This is a drawback not only by virtue of the fact that, as a consequence, those important research findings that relate to feedback and individualized instruction cannot be implemented, but also in that both accommodation of responses and responsiveness are important components of an agent's improvability. As with the textbook, the film is a device which is not conspicuously improvable, and therefore it does not readily lend itself to the validational processes that are necessary before we can ensure a device is implementing research findings.

As in the case of the textbook, the film can, in principle, be designed to accord with research facts, principles, and theories, but cannot adjust to the learning situation sufficiently to be able to make full use of the last of these kinds of finding. However, since the film, like the textbook, is eminently replicable, what *can* be implemented can be implemented on a large scale.

- "*Manipulanda*". By "manipulanda" we mean such devices as tape recorders, as used in the learning of languages, and mathematical and scientific apparatus. This is a class of device that is coming to be used increasingly in the learning situation, and which does little more than to provide the learner with a learning environment which is contrived to react to his behaviour according to rules which go some way towards ensuring that learning will take place. For example, a tape recorder will enable the learner to register his attempts at speaking a foreign language in such a way that he will subsequently be able to compare his attempts with more perfectly-spoken examples of the language. The "structured" apparatus used in the learning of mathematics, when manipulated according to certain simple rules, behaves in a way that is analogous to the behaviour of the mathematical systems that the learner needs to understand.

Such devices control only loosely the structure and sequence of what is to be learnt, are unsuitable for the pacing of learning, and embody only limited kinds of content – usually providing only a limited set of embodiments of *these*.

They enjoy the important asset that they can accommodate the responses of the learner and provide him with feedback that is contingent upon the nature of these responses, but this is not to say that they can readily vary the learning situation in response to the learner's needs in such a way that they are very "improvable". Again, such agents do not in themselves usually provide opportunity for recording objectively the learner's responses to them, and therefore the information provided by his responses cannot readily be used for purposes of improvement. For these reasons it is difficult to ensure that these agents are transmitting research findings effectively.

While research findings can be taken into consideration in the initial design of the "manipulandum", this kind of agent is not usually sufficiently improvable or adaptable to constitute an interpreter of those findings that are communicated as principles of learning and theories. It may seem that the manipulandum is not very effective in implementing research findings. However, since it will accommodate the learner's responses and provide him with feedback that is contingent upon these responses, it can, in principle, communicate instances of that highly important class of findings which take into account the learner's responses.

- *Programmed Instruction*. Programmed instruction is the most promising rival to the human tutor as a transmitter of research findings: a faithful representation of the structure of the subject-matter is possible; the order in which material is encountered can be strictly controlled; pacing may be determined by the designer of the learning situation or by the learner; a programme can be linked to various devices for embodying the content in appropriate media; the learner's responses are accommodated, and, consequently, both feedback and adjustment of the learning-course to the learner's needs are possible.

In the case of this agent, the learner's responses are accommodated in a way that facilitates improvement, and ample provision is made for exploiting this facility, in the form of elaborate routines for the validation of programmes. These routines can well be used in order to ensure that the programme will reflect research findings. Moreover, since programmes are amenable to modification in response to the learner's behaviour, they are sufficiently flexible to "interpret" in limited ways the findings that are communicated in the form of the principle or the theory.

In some ways, the programme is an ideal instrument for the implementation of research findings, for it is both improvable and replicable on a large scale. Not only are there objective procedures for giving us a guarantee that the programme is controlling the learning situation in a desired direction, but once we have such a guarantee we can spread this control over a large number of situations. Thus we can both ensure implementation and multiply instances of it.

- *The Human Teacher*. Because of his versatility, one might expect that the teacher would be the most effective of the transmitters of research findings. However, he suffers from certain rather telling limitations which, in some respects, give the advantage to his inanimate rivals.

  In principle, the teacher is perfectly capable of presenting subject-matter with a prescribed structure in a prescribed sequence and at a prescribed (or variable, where necessary) rate. However, there are two important reasons why this capability is seldom realised:

  a) His powers of adjustment enable him to respond to learning needs that are, or at least may temporarily appear to be, more important than requirements of structure sequence and pace; consequently, he is often tempted to sacrifice the latter. It is difficult to "programme" so flexible an agent as the human teacher in such a way that we can be sure that he will control the learning situation in accordance with our prescriptions.

  b) Compared with other agents, the human teacher is expensive. This usually means that one teacher must monitor and control several learners simultaneously. Since pacing requirements are unlikely to be identical for all of these learners, a uniform pace will lead to variation in the sequence in which material is learnt (as opposed to the sequence in which it is presented) and since the sequence in which material is learnt is a determinant of the effective structure of this material, this latter requirement, also, will be affected. Thus, without individualised instruction it is difficult to control structure, sequencing and pacing, and, consequently, it is difficult to ensure the implementation of research findings that relate to these aspects of the learning situation.

We might expect that the human teacher's really important advantage over other agents would lie in his ability to accommodate the learner's responses, and to react by providing feedback and appropriately modifying the learning course. Certainly, the teacher has considerable potential in these directions. Unfortunately, the likelihood that he will realise this potential is diminished in proportion to the pupil-teacher ratio. Moreover, while the teacher may well cope brilliantly with these aspects of the learning situation, it is difficult to *ensure*, as we might in the case of programmed instruction, that he will control them appropriately.

Again, we are in danger of giving the teacher too much credit for "improvability". Certainly, the human can learn, but it is difficult to guarantee that he will learn in ways that research indicates it is important that he should learn. Because it is difficult to standardise the behaviour of humans, the possibilities of which they offer us hope must be out of all proportion to the assurances they give us. We cannot subject humans to the same rigorous validational procedures as those to which we can subject instructional programmes, and consequently we cannot *guarantee* that we shall be able to steer into line with research findings or a research framework their control of the learning situation. While potentially the most improvable of our agents, the human teacher is the agent of whose improvement we can be the least sure.

Likewise, many of the important advantages that might derive from being able to "pre-set" an agent would appear not to be available in the case of the human teacher, for, in his case, we cannot be sure that, once tuned to behave in a certain way in response to a particular set of requirements, the agent will always behave in this way.

Another limitation of the teacher is that many parts of his behaviour defy replication. The moving film or the television set can replicate his initial presentation of material, but, without the help of accessories which are, at present, prohibitively expensive, can do little justice to his talents for accommodating and responding to the pupil's behaviour. Consequently, even where we are sure that a particular human agent is implementing research findings effectively, we cannot do much to generalise this implementation.

A feature of the human teacher that possibly gives him the edge over other agents is his ability to carry out the interpretive activities that are necessary for the implementation of those findings that are communicated in the form of the theory or the general principle. It takes a human being to diagnose the situations in which the general principle is applicable or to draw inferences in conformity with the wisdom embodied in the "calculi" which many of the theories that are available constitute.

A question which arises is that of whether even the human teacher can carry out these activities *effectively*. Since it is very difficult indeed to validate the teacher's effectiveness in these respects, we are usually unable to ensure that research findings of these kinds are being implemented. In this case, perhaps we might be disposed to abandon the facilities that the human transmitter offers and resort to the more modest facilities that the non-human transmitter can enable us to *ensure*. It is only in the cases in which we can ensure improvement by means of objective checks that we are likely to obtain real and cumulative improvement of a kind that is immune to the dangers of vagueness and delusion.

It may be that we should settle for agents such as the instructional programme, which can be designed to make the learning situation comply with research findings, which can be validated in such a way as to *ensure* such compliance, and which can implement findings directly and rigorously. In this case we should be removing from the transmitter much of the responsibility for interpreting information communicated by the general principle and the theory, and for deciding to what extent teaching directives embodied in the hard fact should be observed when weighed against rival considerations in the learning situation.

Perhaps – particularly in view of those difficulties, deriving from the complex quantitative formulation of findings, that we have discussed in an earlier section – this concept of the "tuning" of the transmitter, in such a way that it communicates certain kinds of finding, is a valuable one, and would lead to a greater assurance of implementation than at present exists. Perhaps this would provide a way round many of the problems that seem to be inherent in the present system of communication of findings. The enshrinement of research findings in the form of statements of facts, general principles and theories would seem to derive much of the appropriateness it can boast from the situation in which the *human* agent is given the task of implementing these findings. It is conceivable that, if the agent operating the learning situation were sufficiently improvable, we could legitimately dispense with many kinds of educational research. Some such system as a computer-controlled learning programme might enable us to adjust learning conditions to the learner's requirements without the mediation of such verbal capsules of wisdom, generalised from other learning situations, as the theory, the general principle, and the hard fact.

LEHRMITTEL ALS VERMITTLER VON FORSCHUNGSERGEBNISSEN

von John D. Williams, Sherbrooke

Der Verfasser vergleicht Lehrmittel, die zur Vermittlung von Forschungsergebnissen verwendet werden können, wie z.B. Lehrbuch, Film und "*manipulanda*" (Hilfsmittel wie mathematisches Lehrmaterial und Tonbandapparate, die dem Lernenden Auskunft über die Wirkungen der an ihnen vorgenommenen Veränderungen geben) mit programmiertem und dem vom Lehrer erteilten Unterricht unter Berücksichtigung folgender Gesichtspunkte: Art der Forschungsergebnisse, für deren Vermittlung die jeweiligen Lehrmittel geeignet sind; Aspekte der

Lernsituation, für deren Kontrolle sie verwendet werden können, und Faktoren, die sowohl die Art der vermittelten Forschungsergebnisse als auch den Grad der Vermittlung beeinflussen. Die zuletzt genannten Faktoren betreffen folgende Merkmale der Lehrmittel: ihre Kontrolle der Lernsituation; ihre Fähigkeit, sich Unterrichtszielen anzupassen; ihre Adaptionsfähigkeit an den Lernenden und die Lernsituation; ihre Eignung zur Standardisierung und ihre Reproduzierbarkeit. – Es erweist sich, daß jedes der Lehrmittel seine speziellen Vor- und Nachteile besitzt. Der Verfasser gelangt zu dem Ergebnis, daß der Computerunterstützte Unterricht nicht nur ein idealer Weg zur Vermittlung von Forschungsergebnissen, sondern auch einen Unterricht mit *feedback* ermöglichen würde, der die Notwendigkeit mancher heute durchgeführten Evaluationsuntersuchungen überflüssig machte.

LES MOYENS D'ENSEIGNEMENT EN TANT QUE TRANSMETTEURS DE RESULTATS DE RECHERCHE

par John D. Williams, Sherbrooke

Les moyens d'enseignement – comme manuel, film et matériel à "manipuler" (du matériel didactique p. ex. et des enregistreurs pouvant renseigner l'élève sur les effets des manipulations qu'il a exécutées) – qui pourraient être utilisés pour transmettre les résultats de recherche, l'enseignement programmé et l'enseignant sont comparés: en fonction des sortes de résultats de recherche qu'ils sont à même de transmettre, en fonction des aspects de la situation pédagogique qu'ils sont à même de contrôler et en fonction de certains facteurs qui affectent à la fois les sortes de résultats de recherche transmis et le degré de transmission qui a lieu. Ces derniers facteurs concernent les caractéristiques suivantes du matériel: son contrôle de la situation pédagogique, son habilité à s'adapter aux buts de l'enseignement; son adaptabilité à l'élève et à la situation pédagogique; sa facilité à être standardisé; sa reproduction.

Chacun de ces moyens présente des avantages particuliers et des inconvénients. L'auteur en conclut que l'enseignement contrôlé au moyen d'un ordinateur ne procurerait pas seulement un moyen idéal pour transmettre les résultats de recherche, mais fournirait aussi un enseignement avec la possibilité de *feedback* qui réduirait la nécessité d'entreprendre certaines sortes d'évaluations pédagogiques qui sont entreprises actuellement.

RESPONSIVENESS AND RESISTANCE IN THE EDUCATIONAL SYSTEM TO CHANGING NEEDS OF SOCIETY: SOME SWEDISH EXPERIENCES

by Torsten Husén, Stockholm

One of the catch-phrases used to characterize current needs in the world of education has been "innovation". Behind the attempts to "innovate" has been the growing realization that education in modern society is operating under quite new conditions which necessitate a thorough re-

thinking and an abolition of time-honoured conceptions and practices. In countries where researchers have been able to sell educational research to the legislatures and governmental agencies, their main argument has been that research will in some sense improve education, make it more adequate, more efficient and less costly. Under the impact of the educational explosion and the soaring costs for running the schools more and more people, many of them outside the system, have begun to question the way the "knowledge industry" so far has been run. In several countries educational researchers have in recent years suddenly found themselves equipped with at least as much money as they are able to consume, sometimes more than their digestive systems can stand.

The researchers repeatedly have had the frustrating experience that their findings have very little, if any, impact upon what is happening in the classroom. Time-honoured practices prevail in spite of the fact that they run contrary to basic notions about how children develop and learn. Systems of grading and grouping that are predominant both in the United States and in other countries are based on conceptions that nobody who knows even a little about how individual differences in ability are distributed and intercorrelated would be willing to underwrite as scientifically sound practices. Why, then, the hard resistance against a change that from an abstract point of view would seem to be self-evident? We shall, on the basis mainly of experiences from Sweden, try to indicate certain factors pertaining to how education works within society at large and within its own institutional setting. We should, however, like to present immediately our own bias by stating our thesis that educational change at large cannot be accomplished by educational means. The socio-economic changes are more basic and they will always have to provide the fertile ground for educational changes which are compatible with the societal changes at large. On the basis of the findings in the International Project for the Evaluation of Educational Achievement 1) the author dared to formulate the slogan that education cannot substitute for social action. We shall try to substantiate that statement later in this paper.

Political Factors

Let us begin with the question why, for instance, countries like the United States, the Soviet Union or Sweden by and large have a comprehensive system in providing education for the large majority of the children during the first eight or more school years, whereas England, France and the Federal Republic of Germany on the whole have kept their dualistic or parallel system on which the academic goats are separated from the non-academic sheep as early as at the age of 10 or 11. It is immediately evident to us that there are certain historical factors which account for the difference. The European society has been and still is more class-stratified and has a relatively low degree of social mobility. The majority of children with working class background have to be content with the mandatory elementary school whereas the middle-class and upper-class role includes the privilege of attending the selective and academic secondary school and qualifying for university entrance. Until now only six or seven percent of the students at the French or West German universities have had a working class background, whereas their parents represent fifty percent of the electorate.

Education has, in a social system with ascribed status, the character of a status symbol. In a society where education more and more tends to become the democratic substitute for inherited wealth and background, and where demands for more equality of opportunity become more vociferous, those who are demanding change are regarded as threats to the prerogative of the establishment. As long as those who are seeking to reform society are not powerful enough to dominate the legislatures and to implement their legislation, attempts to bring about changes in education are mostly launched in vain.

Sweden can be used as an illustration. An American, Rolland G. Paulston [2]) at Teachers College, Columbia University, has recently conducted a study of the historical background of the Swedish School Reform, focussing on why it was possible to win the majority both of the legislators and the public at large for a reform which was strongly resented by large and powerful groups in the educational establishment both at the secondary schools and the universities. The debate about how schools during the mandatory school age should be structured in order to provide equality of opportunity began in the 1880's when the public schools were almost completely separated from the first grades: on the one side the university-preparing *gymnasium* geared to those with proper social background and on the other the *folkskola*, the basic elementary school, which was geared to give some thin grounding in the three R's and, not so thin, in the Scriptures.

Paulston's study is extremely helpful in the identification and disentangling of the formative factors which were behind the change of Swedish schooling from dualism to unity; from elitism to egalitarianism[3]). An attempt was made by the Social Democratic government at the beginning of the 1920's to introduce a common six year school and to abolish differentiation after Grade 3. But they were not able to obtain sufficient political backing, not even within their own party. After the 1927 Education Act, which can be regarded as a compromise between the dualistic and the comprehensive camp, the Social Democrats took only a marginal interest in reforming education during their first decade of political power during the 1930's. The pursuit of basic social and economic reforms aiming at establishing full employment and social welfare were at the forefront. Furthermore, during the 1930's unemployment among highly trained people made quite a few radicals more or less tacitly accept the principle of elitist or selective education, a system whose inequalities they so bitterly had attacked, provided more effective support of lower class students for entry into the system could be guaranteed. During the so-called "harvest time" after 1945, the reform of education was brought into focus and became a major political target. The coalition government during the war had in 1940 appointed an expert committee comprised completely of educators to overhaul the entire school system in Sweden. The committee, however, had a deadlock about how to structure the compulsory school. The issue was whether a transfer to the academic university-preparing secondary school should take place after Grade 4 or Grade 6. The stalemate got a "gordic" solution by the Parliamentary School Commission of 1946 which in its report, submitted to the Government in 1948, suggested a unitary school which should substitute for all existing types of schools during the first nine school years. The blueprint drawn up by the Commission laid the basis for the 1950 Education Act which made provisions for a try-out period in the 1950's which in its turn provided the framework for the 1962 decision to introduce the system all over the country, after more than half of the school districts had introduced it during the 1950's.[4])

In 1958, when roughly one-fourth of the school districts in Sweden had introduced the comprehensive school on a try-out basis, the Swedish Radio Corporation carried out a public opinion poll pertaining to the new school system. The poll showed that between one half and two-thirds of the public was in favor of the comprehensive school, about one-fourth was against it, and the rest were undecided. Thus, at a time when the overwhelming majority of the secondary school teachers were rejecting the blueprint for the reform laid down in the 1950 Education Act, the majority of the voters were in favor of it. Furthermore, the attitudes towards the comprehensive school were more favorable in districts with the new set-up than in districts where the parallel school system still was kept. This might seem rather self-evident, but considering the controversy that had been aired about the appropriateness of the comprehensive school, persons who were disappointed with it could easily have aired their dissatisfaction in the poll.

So far, we have indicated what political forces were at work. It should be mentioned that legislation in 1950 and 1962 was passed almost unanimously. More than 90 percent of the members of the *Riksdag* were in favor of the Reform. The opposition came from the conservative party, which however did not vote against the governmental bill neither in 1950 nor in 1962.

The lesson to be learned from the study of educational change in, for instance, Sweden is that it has to be conceived within the priority of national goals. All important legislation was drafted, passed, and implemented under the auspices of the same political party. Actions by which the Welfare State was legislated and began to be implemented preceeded the commitments to educational change. The immediate and important task in the 1930's was to establish full employment and social security.

The educational reform during the 1940's was launched under the banner of equality of opportunity. Thus, unitary structure and abolition of elitist differentiation during the first nine school years plus child allowances were thought of as the primary means of broadening opportunities for young people from working class homes to receive upper secondary and higher education. But there has been an interesting time lag between opportunity and the readiness to take advantage of it. The rapidly increased standard of living among the masses, in the first place, led to the acquisition of material goods instead of education. In an inauguration address that the author gave in 1953 he pointed out that, at that time, the number of private automobiles in working class families had increased more rapidly than the number of matriculants to the university. This parallels the development in England after the passing of the 1944 Education Act, when all the places in the tax-supported grammar school were thrown open for entrance competition instead of having a certain quota set aside for able students from lower-class homes. In a survey by Floud and Halsey5) it was shown that the immediate effect of the 1944 "democratization" was a relative drop of students from working-class homes, whereas those with middle-class background gained by the change.

Bertold Brecht in the *Dreigroschenoper* has the wellknown aphorism "*Erst kommt das Essen und dann die Moral*". By way of travesty this can be re-phrased like this: First stable jobs and decent standard of living, then education.

The level of aspiration as to the amount of education that parents want their children to get has increased tremendously in recent years and its financial consequences have been frightening to our Government.

The author has been able to follow about 1500 individuals from 1938, when they were third graders, to the middle of the 1960's, when their own children were on the average of the same age as they were themselves in 1938. About one-third had obtained some kind of secondary, as a rule academic, education, on the top of the seven years of elementary mandatory schooling. Those with upper or middle-class background had as a rule transferred to the secondary school after Grade 4. Their own children stay in school for a minimum of nine mandatory school years. Asked about what educational aspirations they have for their children, more than one-third with working-class background and between one-half and four-fifths of those with middle and upper-class background wanted their children to go to the university. 6)

The abolition of the dualistic system made it possible to study to what extent aspirations in students all over the country are related to the type of school structure prevailing. School data for one-fifth of the sixth graders are collected every fifth year in Sweden. Härnqvist7) in a large survey took advantage of this data bank and compared areas with parallel or dualistic structure with those having a comprehensive structure, keeping socio-economic background under control. He was able to show that a postponement of the differentiation of the children into academics and non-academics implied a sharp increase in transfers to academic education among students from farm and working-class families.

It should be pointed out that planning and policy-making in Sweden are essentially carried out at the national level. In the book on *Educational Research and Educational Change: The Case of Sweden*8) in which G. Boalt and the author are surveying the research that had bearing on the Swedish School Reform, the author tried to convey a picture of the role played by what were previously referred to as the Royal Commissions, whose counterparts are found, we suppose, only in England. When an extensive reform is called for and no urgency makes immediate actions necessary, the Government, i.e., the King, appoints a Commission which often is given ample resources in order, for example, to keep an efficient secretariat and to conduct surveys and research. In most cases various groups, political and others, with vested interests in the issues dealt with by the committee are represented. Differences in opinion therefore in most cases are ironed out at the committee table and it rather seldom occurs that members file dissenting opinions on matters of principle. Anyhow, the report submitted to the Government is in most cases a comprehensive and thorough one and the result of a series of compromises. The report is thereafter submitted for review to a large number of both governmental and non-governmental bodies. Thus, reports on, for example, educational problems are submitted not only to various governmental agencies but also to the universities, teachers associations, the federation of labor unions, and various political organizations. On the basis of the reviews and the original report, the government then decides to draft legislation which is introduced in the *Riksdag*. The committee system makes provisions not only for rather elaborate preparations but also for involvement of various relevant groups within society and is thus an important part of a working democracy.

Institutional Factors

Let us now move to the institutional factors relevant to educational change in Sweden, and we would presume, in most other countries with a similar social structure. The overwhelming majority of the teachers in the secondary schools were opposed to the comprehensive school the way it was organized. Another reaction could hardly be expected. The basic issue was whether and to what extent the learned, academic, elitist, high-prestige, upper-class-preparing secondary school of the type prevailing in Europe since the Napoleonic era and with traditions back in the medieval ages should be replaced by a unitary school to which all the children in a given area were assigned. Vital vested interests were at stake both to the parents who used to send their children to the elitist type of schools and to the teachers. The elitist secondary school, to which admission was based upon entrance examinations and where more than one-third of those selected either repeated at least one grade or dropped out during the first four years, was an institution where the teachers were instrumental in deciding the fate of the students. They were in the last run the gatekeepers to the establishment. Both the selection to these schools and grade-repeating was related to the social background of the students.9)

Even in a country with a social and ethnic homogeneity like Sweden, the changeover from a selective to a comprehensive system is quite an educational revolution. Teachers who were used to teaching a select group of ten to twenty percent of the children in an age group, mostly children with middle-class background, were now faced with the task of teaching a much wider spectrum with regard to intellectual ability, motivation and, not least, social background. They were trained for an elitist system where a considerable attrition took place. Now they were not any longer allowed to get rid of students who were not supposed to be fit for scholastic exercises. Several euphemistic terms were invented during the changeover for the non-academic student. They were called the "non-theoretically" as opposed to the "theoretically" geared. Sometimes they were referred to as "book-tired" or "practical".

The report on the comprehensive school that was submitted to the Government in 1948 was sent out for review to more than 200 academic secondary schools. All but three of the faculties were opposed to the organization suggested by the Commission. In 1954–55, when the try-out program had been going on for some time, the teachers in grades 7 through 9 were polled as to their opinion on differentiation at that particular level. More than 70 percent (including also elementary school teachers who with some extra training taught at that level) preferred homogeneous grouping, whereas less than on-fifth thought that grouping (setting) in one or a few subjects would suffice. Whereas the primary school teachers officially were in favor of a common basic school, many of them tended in matters of differentiation to recommend some sort of grouping, mostly homogeneous grouping.

In 1956 the first new School of Education, which was expected to prepare teachers for the new set-up began to operate. It was emphasized that the differentiation problem in the upper section of the comprehensive school should be solved by providing the teacher candidates with a proper methodology of instruction. This was by no means easy to achieve, since most of the professors at the new institution were themselves products of the elitist system and in many cases had the same vested interests in the traditional set-up as their colleagues.

Marklund[10]) in 1960 conducted a survey of all the teacher candidates in Sweden who were about to graduate. The population also comprised the School of Education in Stockholm. The study had two major aims:

1. To map out the knowledge which the teachers had of the school reform, its aims, the change in school organization, the new methods of teaching, and its consequences for the teachers.

2. To assess the attitudes toward the same aspects of the school reform which were considered under point 1.

The differences in factual information between prospective teachers from the lower, middle, and upper grades of the comprehensive school were rather small. Those who had been trained in the new School of Education performed significantly better than those who had been trained in the traditional institutions. The prospective middle grade teachers had a more favorable attitude toward the school reform than the upper grade teachers. Thus the latter tended to emphasize more the importance of differentiating measures as compared to the former. For instance twice as many of the upper grade teachers endorsed the statement that a comprehensive system mainly suits those students who are heading for vocational training. The attitudes toward the reform were more favorable among trainees at the School of Education. Marklund had advanced the hypothesis that those teachers whose role as teachers would be more affected by the school reform would hold a less favorable attitude than those whose role would by and large be less affected. The drastic changes occurred at the upper grade level, particularly in grades 7 and 8. The less favorable responses among the prospective upper grade teachers confirmed the hypothesis.

Marklund[11]) also hypothesized that there would be a positive correlation between the knowledge of and attitudes toward the school reform. The correlation between information and attitude scores were (after corrections for attenuation) +.24 for middle grade teachers and +.46 for upper grade teachers. The coefficient is significantly higher for the group whose working conditions would be most profoundly affected by the reform and who could therefore be expected to be more emotionally involved in the reform.

The role of the business community is of particular interest in this connection. Before the end of the 1940's Swedish industry and commerce had paid very little attention to education, apart from vocational training provided within the formal school system. The changed attitude was reflected in the fact that the Industrial Council for Social and Economic Studies began to sponsor surveys of strategic school problems. Thus it co-sponsored with the Government the extensive study of the curriculum content of mathematics, mother tongue, physics, chemistry and social studies[12]). It also carried out studies of the requirements that working conditions in modern industry put on young people and in that respects they lacked proper preparation. The failings, by the way, mostly were located in the non-cognitive domain. In the Federal Republic of Germany the German Committee for Education (*Deutscher Ausschuß für das Erziehungs- und Bildungswesen*) in 1959 submitted a plan for the reorganisation of the school system.[13]) They suggested minor structural changes away from a strictly selective to a more comprehensive system, but in many states not even these changes could obtain political backing. In the stalemate that characterized the German reform movement in the beginning of the 1960's, and which by and large still prevails, the German business community became increasingly concerned about the inadequacy of the German educational system to provide the training that would fit a modern economy. The rigid selective system suited an economy with a small professional elite and masses of unskilled or semi-skilled labor. But surveys conducted at the beginning of the 1960's showed that the small number of graduates from the German academic secondary school would not even suffice as a recruiting pool for the teacher training institutions. Thus, big business began to discuss with key educators from the universities what kind of studies and what actions would have to be taken. A group of leading businessmen met regularly with the academicians at Ettlingen, a small town in Baden, and therefore was called the *Ettlinger Kreis.*

On the basis of this sketchy presentation our conclusion would be that the responsiveness of the educational system as such to changing needs and conditions of the society is rather low, if not non-existent. The increasingly important role that education plays in present-day meritocratic and expert society provides more power for those who represent education. They become the gate-keepers to social promotion and therefore more and more feel that they represent the established society. They can speak for the established strata of society in resisting changes, particularly changes which broaden educational opportunities. No educational reforms, at least in Europe, have had their main backing from the teachers and school administrators. As far as Sweden is concerned, and the same seems to apply to other European countries, the increased standard of living provided for by the Welfare State stepped up aspirations for education. The various people's movements began to realize that they had a stake in an educational system which could provide greater equality of opportunity. The politicians began to realize the changed priority status of education in the general public and began to pay more attention to it.

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REFORM UND TRADITION DES SCHULSYSTEMS IM WANDEL GESELLSCHAFTLICHER BEDÜRFNISSE

von Torsten Husén, Stockholm

Der Verfasser behandelt die Zusammenhänge zwischen dem Anwachsen sozialer Erwartungen und ihren Auswirkungen auf Niveau und Qualität von Erziehung und Bildung. In diesem Prozeß sind Unterschiede zwischen den einzelnen Ländern festzustellen. In Ländern wie der Sowjetunion, Schweden oder den Vereinigten Staaten z.B. durchläuft die große Mehrheit der Kinder, wenigstens während der ersten acht Schuljahre, ein gesamtschulartiges (*comprehensive*) System; in Ländern wie England, der Bundesrepublik Deutschland und Frankreich dagegen müssen sich die Kinder in einem dualistischen Schulsystem im Alter von 10 oder 11 Jahren für den akademischen oder den nicht-akademischen Bildungsweg entscheiden. – Andere wirtschaftliche und politische Bedingungen führten in Schweden zur Entwicklung des Schulsystems vom Dualismus zur Einheit, von der Eliteausbilding zu gleichen Bildungchancen für alle. – Unter Hinweis auf die allgemein steigenden Bildungserwartungen betont der Verfasser die Notwendigkeit, ein Schulsystem zu errichten, das diese Erwartungen befriedigen kann, indem es der Jugend die größtmögliche Entwicklung ihrer Fähigkeiten garantiert. – Schulreformen haben niemals ihren Hauptrückhalt bei Lehrern oder Schulverwaltern gefunden. Vielmehr war stets höherer Lebensstandard Ursache für steigende Bildungserwartungen. Daher begann man zu erkennen, daß sich der Einsatz für ein Erziehungssystem lohnte, das größere Gleichheit der Bildungchancen gewährt. Auch die Politiker erkannten den gewandelten Prioritätsrang der Erziehung in der Öffentlichkeit und begannen ihr mehr Aufmerksamkeit zu widmen.

REFORME ET TRADITION DU SYSTEME SCOLAIRE FACE AUX BESOINS DE LA SOCIETE

par Torsten Husén, Stockholm

L'auteur traite ici les rapports existant entre l'accroissement des aspirations sociales et leurs répercussions sur le niveau et la qualité de l'éducation. Dans ce processus, il faut cependant tenir compte des différences qui existent de pays à pays. Il y a des pays, tels que l'Union soviétique, la Suède ou les Etats-Unis où les enfants reçoivent – tout au moins durant les huit premières années scolaires – un enseignement unique (*comprehensive*); par contre, dans des pays à système scolaire dualiste, tels que l'Angleterre, l'Allemagne fédérale et la France, les enfants doivent se décider à l'âge de 10 ou de 11 ans pour une formation académique ou non-académique. Différents facteurs d'ordre économique et politique ont provoqué en Suède le développement du système scolaire du "dualisme" à l'unité, de la formation de l'élite à l'égalité des possibilités d'accès à l'éducation. En se basant sur l'ac-

croissement des aspirations en éducation qui revêt un caractère général, l'auteur souligne la nécessité de créer un système scolaire qui satisferait ces besoins, en garantissant aux jeunes le plus grand épanouissement possible de leurs capacités. Les réformes scolaires n'ont cependant jamais été appuyées en premier lieu par les enseignants ou les administrateurs. Par contre, la principale raison de l'accroissement des aspirations en éducation a toujours été un niveau de vie plus élevé. C'est pourquoi, on a fini par reconnaître qu'il valait la peine d'introduire un système éducatif qui garantit une grande égalité des possibilités d'accès à l'éducation. Les politiciens également ont reconnu le caractère prioritaire de l'éducation et ont commencé à lui accorder une plus grande attention.

COMMUNICATIONS – BERICHTE – COMMUNICATIONS

RECHERCHE DE NOUVELLES CONCEPTIONS SUR L'ENSEIGNEMENT PROGRAMME

L'opinion critique relative aux conceptions actuelles sur l'enseignement programmé est exprimée par des chercheurs américains et soviétiques. Elle a été aussi exprimée lors du cinquième congrès de la Société américaine de l'Enseignement programmé en avril 1967 à Boston ainsi que dans plusieurs articles publiés récemment en Union Soviétique[1]). Il ne faut cependant pas que cette opinion soit considérée comme une tentative visant à exclure cette méthode de l'école, ni comme une diminution d'intérêt de la part des chercheurs de différents pays à l'égard de cette "nouvelle technique".

Les jugements critiques exprimés à l'égard des programmes de Skinner et de Crowder, sont plutôt les symptômes d'une tendance à transformer cette méthode, devenue presque classique, mais qui s'est révélée peu effective dans le développement du raisonnement de l'élève en outil pédagogique.

L'enseignement programmé ne peut devenir un tel outil que s'il cesse d'être considéré comme remède à toutes les lacunes du système scolaire actuel, et s'il est traité comme une méthode d'enseignement parmi tant d'autres et non pas comme la seule et unique méthode.

Cette manière d'interpréter est bien connue en Pologne et a gardé sa valeur jusqu'à nos jours. On décèle chez nous beaucoup de défauts dans cette "nouvelle technique", on découvre que plusieurs problèmes ne sont pas encore résolus, mais on souligne aussi les avantages incontestables de cette méthode, comme p. ex. la nécessité de vérifier empiriquement le contenu des manuels soumis à des groupes d'élèves représentatifs pour les populations qui vont les utiliser ensuite.

En même temps, on éprouve, en Pologne, le besoin de créer de nouvelles conceptions de l'enseignement programmé. Il s'agit de conceptions moins simplistes, n'abordant pas les problèmes d'un seul côté, comme le faisaient les programmes "classiques", et qui permettraient de développer le raisonnement des élèves d'une manière plus efficace.

Comme résultat des travaux effectués dans ce domaine, on a conçu l'idée d'un programme mixte vu dans un sens large.

On a pris comme base les hypothèses suivantes, qui ont été vérifiées par des recherches empiriques:

1. L'enseignement programmé "classique" basé sur les idées de Skinner, Crowder

et Austwick se prête à l'apprentissage passif qui exige surtout des élèves de la mémorisation. On peut s'en servir aussi pour affermir les connaissances acquises, les contrôler et les évaluer.

2. Les textes programmés d'après les méthodes linéaires, ramifiées et celle de Sheffield sont utiles dans le travail avec des élèves retardés, parce qu'ils permettent de combler les lacunes dans leurs connaissances.

3. Les programmes "classiques" construits le plus souvent d'après la formule "behavioriste" S – R (stimulant – réaction) ne donnent pas l'occasion de développer le raisonnement critique des élèves, même s'il s'agit de disciplines qui se prêtent spécialement à la programmation, comme p. ex. les mathématiques et la grammaire.

Dans une telle situation, il est évident qu'il faut remplacer ces programmes par un autre qui serait moins simpliste et plus souple, et qui prendrait en considération toutes les actions qui forment l'ensemble du processus d'apprentissage. Autrement dit, ce programme permettrait aux élèves d'effectuer différentes opérations intellectuelles, et donnerait l'occasion de se servir des connaissances acquises pour la solution des problèmes posés.[5])

Le programme dont la structure est représentée en face, paraît mieux adapté à toutes ces conditions que les programmes "classiques".

Son élément de base est dit bloc-problème (BPS); il demande un effort intellectuel intense de la part de l'élève p. ex. la solution d'un problème dont les données initiales sont incomplètes, l'énoncé ou la vérification d'une hypothèse, la proposition d'une expérience etc. Au cours de ce travail, l'élève est obligé de déduire, de démontrer, d'expliquer et de vérifier – en un mot de raisonner de manières diverses, en enrichissant ses connaissances.

Les autres éléments du programme constituent les blocs: information (BI), test-information (BTI), test-problème (BTPS), correction-information (BCI) et problème-correction (BCPS)[6]).

Comme l'indique son nom, le bloc BI contient une portion d'informations déterminées par l'auteur du programme. Ces informations peuvent être programmées (d'après la méthode linéaire ou celle de Crowder) ou bien présentées d'une manière conventionnelle. Il est important que les informations soient bien coordonnées selon un critère choisi, p. ex. selon la relation cause – effet et qu'elles s'inscrivent dans les domaines de notions bien distinctes (c). Pour atteindre ce but, il est utile de recourir à l'analyse de matrices dont se servent les partisans de la méthode de RULEG.

Le bloc BTI a pour tâche d'évaluer l'apprentissage par l'élève des notions de tous les domaines et de le diriger suivant les résultats obtenus vers le bloc BPS ou bien BCI. L'élève passe au bloc BPS s'il a acquis parfaitement toutes les connaissances contenues dans le bloc BI. Au cas où il n'a pas acquis les connaissances d'un domaine (c_1, c_2, . . . ou c_4) l'élève passe à un programme de correction; là il devra compléter ses connaissances dans les domaines où cela est nécessaire, et qui ont été déterminés par les résultats du tests du bloc BTI.

Par exemple: si l'élève n'a pas acquis les connaissances d'un seul domaine de notions du bloc BI, p. ex. c_4, il passera uniquement par la variante c_4 du bloc BCI. Au cas où il n'a pas acquis les notions de c_2, c_3 et c_4 il sera dirigé par le bloc BTI aux variantes de correction cc_2, cc_3, cc_4 du bloc BCI.

Ainsi, il y a des élèves qui passent au bloc BPS plus vite que les autres; les uns passent là directement, les autres sont obligés de laisser la voie principale et de s'engager dans les voies annexes de correction. La structure de cette ramification de-

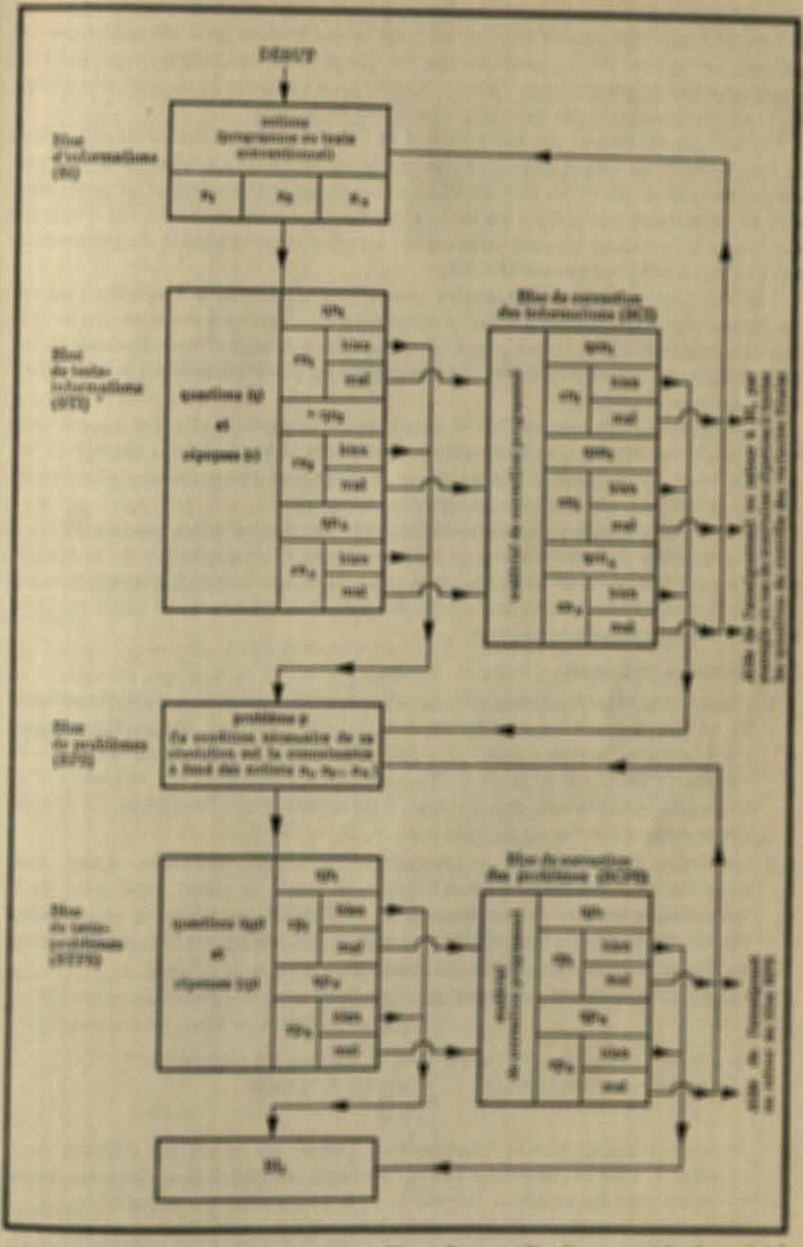
DÉBUT
Bloc d'informations (BI)
notions (programmées ou texte conventionnel)
n_1
n_2
n_x
Bloc de tests informatifs (BTI)
questions (q) et réponses (r)
bien
mal
Bloc de correction des informations (BCI)
matériel de correction programmé
Bloc de problèmes (BP)
problème p
Bloc de tests-problèmes (BTP)
questions (qp) et réponses (rp)
Bloc de correction des problèmes (BCP)
matériel de correction programmé

Schéma de programme permettant aux élèves d'accomplir diverses opérations intellectuelles et de se servir des connaissances qu'ils ont acquises pour solutionner des problèmes déterminés vrait rendre impossibles d'autres fautes de l'élève. Autrement dit: l'élève quittant le bloc BCI doit bien connaître le (s) domaine (s) des notions qu'il n'a pas acquis en passant par le bloc BI. La pratique montre que grâce à une soigneuse vérification expérimentale du programme, on peut atteindre ce but avec la plupart des élèves. Ceux qui ne réussissent pas doivent s'adresser au professeur.

L'étude des matériaux des blocs BPS et BCPS se fait de manière analogue. Dans ce cas, ce sont les élèves qui n'ont pas résolu le problème du bloc BPS que l'on dirige par le bloc, BTPS au bloc BCPS. Eux aussi peuvent s'adresser au professeur s'ils ne réussissent pas malgré les indications données dans le bloc BCPS. Ceux qui ont résolu le problème, passent directement à la deuxième séquence du programme ayant d'habitude pour issue le bloc BI$_2$.

Les blocs caractérisés ci-dessus sont comme des briques avec lesquelles l'auteur du programme peut construire des programmes de structures diverses. Dans certaines circonstances, on devra prendre comme point d'issue d'une séquence p. ex. le bloc BPS ou BTI au lieu de BI. Ce qui détermine une structure est le but didactique qu'on veut atteindre.

La vérification expérimentale des programmes construits d'après le principe décrit ci-dessus montre que les résultats qu'on peut obtenir suivant cette voie dépassent ceux qu'on peut atteindre en se servant des programmes "classiques" analogues, ou bien des méthodes conventionnelles.

En raison de l'étendue relativement modeste des études faites jusqu'à ce jour, il faut considérer cette thèse comme préliminaire et il est nécessaire de la vérifier sous l'aspect des diverses matières ainsi que des divers niveaux d'enseignement.

Nous présentons ci-dessous une partie de manuel d'algèbre établi selon les principes de la programmation de blocs.

Sujet 1. Notion d'ensemble

1.1 L'une des notions fondamentales de la mathématique est la notion d'ensemble. Tu te sers du mot "ensemble" dans la langue courante. En mathématique, il a à peu près le même sens. On a donc l'ensemble des élèves de notre classe, l'ensemble des livres de la bibliothèque scolaire, l'ensemble des lettres de l'alphabet latin, l'ensemble des diviseurs d'un nombre etc. D'habitude, on désigne des ensembles par des majuscules p. ex. A, B, . . . X, Y, Z.

1.2 Les objets appartenant à un ensemble sont appelés *éléments*. Ainsi, tout élève est un *élément* de l'ensemble des élèves de sa classe, tout livre de la bibliothèque scolaire est un *élément* de l'ensemble des livres de cette bibliothèque, toute lettre est un *élément* de l'ensemble des lettres. Nous désignerons les éléments des ensembles par des minuscules p. ex. a, b, . . . x, y, z.

1.3 La phrase "a est un élément de l'ensemble A" s'écrit

$$a \in A$$

(le symbole $\in$ peut être lu "appartient à" ou "est un élément de").
La phrase "a n'appartient pas à l'ensemble A" s'écrit

$$a \notin A$$

(le symbole $\notin$ peut être lu "n'appartient pas à" ou "n'est pas élément de").
Exemple 1. Soit D l'ensemble des diviseurs du nombre 4. Les éléments de cet ensemble sont les nombres positifs 1, 2, 4, et les nombres négatifs −4, −2, −1. L'ensemble D contient donc les éléments: −4, −2, −1, 1, 2, 4 et aucun autre. Nous écrivons:

$$D \in \{-4, -2, -1, 1, 2, 4\}$$

Le nombre 3 ne divise pas le nombre 4 alors le nombre 3 n'appartient pas à l'ensemble D.

Nous écrivons donc: $3 \notin D$

1.4 Nous pouvons représenter graphiquement un ensemble par une figure géométrique quelconque, et un élément par un point. Or, tout point représente un élément.

Sur le Graphique 1 tu vois l'ensemble X et les éléments a, b, c, d. Complète les phrases suivantes en mettant

$\in$ ou $\notin$:

a X
b X
c X
d X

Graphique 1

Compare tes résultats avec la réponse indiquée à la page ☐.

Questions et exercices

1.1.1 Comment désignons-nous les ensembles?
1.2.2 Qu'est-ce qu'on appelle élément d'un ensemble?
1.2.3 Comment désignons-nous les éléments d'un ensemble?
1.3.4 Ecris à l'aide de symboles la phrase "y appartient à l'ensemble Y".
1.3.5 Comment noter la phrase: "L'ensemble A contient 3 éléments: a, b, c, "?
1.3.6 Soit N l'ensemble des nombres naturels. Ecris la phrase "le nombre 0,5 n'appartient pas à l'ensemble des nombres naturels".

Exercices

1.1 Donne l'ensemble X des diviseurs positifs du nombre 15.
1.2 Parmi les nombres: [illegible]; 1; 1,5; [illegible]; [illegible]; indique ceux qui appartiennent à l'ensemble F des fractions positives inférieures à 1.

Solutions des exercices

N° de l'exercice	Réponse correcte	Autre réponse à ou manque de réponse	
		Exercice analogue	Programme de correction
		Exemple 1	
1.1	X = (1, 3, 5, 15)	1.1 - 1.3	p. ☐
1.2	[illegible] ; [illegible]	1.1 - 1.3	p. ☐

Ayant donné toutes les réponses correctes, on passe au sujet suivant (p. ☐)

Réponses aux questions posées à la page ☐

$a \in X$
$b \in X$
$c \in X$
$d \notin X$

Programme de correction aux exercices

Exercice 1.1

Donne l'ensemble X des diviseurs positifs du nombre 15.

1. On sait qu'un nombre entier est diviseur d'un autre nombre entier lorsqu'il . . . . . ce nombre.

1. divise	2. Les diviseurs du nombre 15 sont les nombres –, –, –, –, –, –, –, –, parmi lesquels les diviseurs positifs sont les nombres –, –, –, – .
2. –15, –5, –3, –1 1, 3, 5, 15 1, 3, 5, 15	3. Donc l'ensemble X contient les nombres –, –, –, –, (et aucun autre n'y appartient).
3. 1, 3, 5, 15 4. $X = \{1, 3, 5, 15\}$	4. La phrase "l'ensemble X a pour éléments les nombres 1, 3, 5, 15" s'écrit ..... Et maintenant fais, sans aucune aide, l'exercice suivant: Soit A l'ensemble des nombres divisibles par 3. Parmi les nombres 7, 18, 24, 15, 40, 70, 150, 123, 127 indique ceux qui appartiennent à cet ensemble. *Réponse*: 18, 24, 15, 150, 123.

Si tu as donné la réponse correcte, passe à la résolution de l'exercice 2 p. □ , sinon relis ce programme (à partir de la page □)·

Exercice I.2

Parmi les nombres $\frac{1}{2}$; 1 ; 1,5 ; $\frac{3}{7}$; $\frac{7}{4}$ indique ceux qui appartiennent à l'ensemble F des fractions inférieures à 1.

1. Une fraction positive est inférieure à 1 lorsque son numérateur est..... au dénominateur.

2. inférieur	2. Le numérateur de la fraction $\frac{1}{2}$ est.... et le dénominateur ..... Comme le numérateur de la fraction est ... ... à son dénominateur, alors la fraction .... à l'ensemble F ce que nous notons ....
1 2 .. inférieur . appartient $\frac{1}{2} \in F$	3. Le nombre 1 peut être écrit sous la forme $\frac{2}{2}$. Comme dans ce cas, le numérateur est .... à l'ensemble F ce qui implique que le nombre 1 .... à l'ensemble F et nous écrivons ....
3. ...égal n'appartient pas n'appartient pas $1 \notin F$	4. Le nombre 1,5 peut être écrit p. ex. sous la forme de la fraction ... Cette fraction... à l'ensemble F parce que son dénominateur est.... au numérateur.
4. $\frac{3}{2}$ .... n'appartient pas inférieur	5. La fraction $\frac{3}{7}$ .... à l'ensemble F puisque son numérateur est .... au dénominateur. Or, cette fraction est .... à 1.

5. appartient inférieur inférieur	6. La fraction $\frac{7}{4}$ est une fraction .... à 1, or, elle .... à l'ensemble F, ce que nous écrivons ....
6. supérieure n'appartient pas $\frac{7}{4} \notin F$	7. Or, ce sont les fractions $\frac{1}{2}$ et $\frac{3}{7}$ qui appartiennent à l'ensemble F. Et maintenant fais sans aucune aide l'exercice suivant: Soit B l'ensemble des lettres de l'alphabet latin. Parmi les lettres suivantes, indique celles qui appartiennent à cet ensemble R, y, x, k, β, γ, Д ,з, π, s. *Réponse*: R, y, k, s.

Si tu as donné la réponse correcte, passe au deuxième sujet, sinon, relis tout le programme (à partir de la page 489).

Réponses aux questions

1.1.1 Nous désignons les ensembles par les majuscules p. ex. A, B, C, ... X, Y, Z. On propose de désigner:

ensemble des nombres naturels par N
ensemble des nombres entiers par E
ensemble des nombres pairs par P
ensemble des fractions positives inférieures à 1 par F

1.2.2 Les objets appartenant à un ensemble sont dits ses éléments p. ex.: le chat est un élément de l'ensemble des animaux; les nombres 1, 2, 3 sont des éléments de l'ensemble des nombres naturels.

1.2.3 Nous désignons les éléments d'un ensemble par des minuscules p. ex. a, b, c, ... t, s, x, y, z.

1.3.4 $y \in Y$
1.3.5 $A = \{a, b, c\}$
1.3.6 $0{,}5 \notin N$

Le schéma ci-dessus constitue la structure d'une partie du manuel.

NOTES

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¹) P. J. GALPERIN: "O podstawach psychologicznych nauczania programowanego" ("Les fondaments psychologiques de l'enseignement programmé"). *Psychologia Wychowawcza*, 1965, 5. Travail collectif rédigé par A. M. MATOUTCHKINE: *Programirovannoie oboutchen'ie v chkole* (*L'enseignement programmé à l'école*). Kouibytchev: Kouibytchevskoie Knijnoie Izdatielstvo, 1967.

²) Comme problème on comprend une difficulté théorique ou pratique qui demande une attitude active de la part du sujet et qui le conduit à l'enrichissement de ses connaissances. La solution d'un problème – au sens déterminé ci-dessus-exige des connaissances que le sujet acquiert au cous du développement de la pensée.

³) Il faut souligner que les programmes "classiques" ne contiennent pas en général les éléments désignés ci-dessus par BPS, BTPS et PCPS.

CZESLAW KUPISIEWICZ et ANTONI TUKALSKI, Warsaw

CONFERENCES – KONGRESSE – CONGRES

CONFERENCE ON THE HELPING RELATIONSHIP IN THE CLASSROOM

University of Chicago, July 1968

The Bulletin entitled "Learning by Teaching", edited by the University of Chicago, July 1968, describes the methods and practices of student tutoring, inter-age classes, and small group projects. This report delineates the State of the Art as pieced together at a Conference in Chicago, July 1–12, 1968. The heart of the report is the summary of practices from Portland, Oregon to Long Island, New York – with a side excursion to two schools in England – and the reports of the "interest groups", each dealing with a major aspect of the "helping relationship". Included also are lists of materials, references, roster of participants, etc. The report on Conference Activities suggests in-service training experiences for introducing the art to school faculties, student teachers, and others.

A brief history of the Conference would begin in 1964 with library research undertaken at Chicago as background for a subsequent Nat. Institute of Mental Health (NIMH)-sponsored project on "use of small groups to adapt problem students". We found a reference to "maladapted" high school girls helping in the nursery school, and we tucked away that idea as one of four approaches worth trying. We were also aware of some of Ron and Peggy Lippitts' experimentation with sixth grade helpers in Detroit kindergartens. Two years ago we began experimenting with student tutoring in both under- and over-privileged schools. We were profoundly impressed with the extraordinary seriousness and maturity displayed by almost every tutor as long as he was in contact with his tutee. (We took to referring to this as the "miracle"). Along about this time, with student protestors, college slum tutoring, and civil rights ferment all about us, we started thinking about the helping or caring relationship in the larger society and to feel that the innovation of students helping each other might be an expression or symptom of the national condition. These thoughts were tried out in an address to the ASCD (Association for Supervision and Curriculum Development) in St. Louis in 1967, and several persons told about student helping practices in their schools. Three lectures in New York State turned up other examples. Thus encouraged, we sought all the helping places we could track down, wrote for materials, and posed the possibility of an experience-sharing conference. The response was overwhelming: more than three-quarters of those invited to the conference actually came, and most brought with them slides, video-tapes, materials, and, best of all, themselves, complete with creativity and professional enthusiasm.

Students in a classroom influence each other's attitudes, self-concept, aspirations, and motivation to learn. This influence usually is unplanned and is often not even recognized, but it exists inevitably wherever persons share a common fate or welfare. It has occurred to a great many school people that, under certain conditions in the classroom, students may influence each other for the better; and that this potential might become an important resource for revitalizing education. The object of the workshop, announced herewith, is to identify the conditions for pupil facilitation of each other and to consider how to set up such conditions and incorporate them within the routine of the school.

The notion that students might learn more by teaching each other has been tested in several schools during the last few years. We have found examples of older students teaching younger ones. The older ones may be more or less "bright", "adjusted", or motivated; and they may serve not only as experts, drill masters, and guides, but also as cross-cultural interpreters, friends, and exemplars. There are also instances of youngsters teaching older students, and of age-mates teaching each other.

In some cases the purpose has been to help the tutor, in other cases the tutee. The "lesson" may range from a drill assigned by the "receiving" teacher and practiced by the tutor to a complicated activity worked out by a group of tutors and then taught by "teams". In recent studies at Chicago, fifth and sixth graders, including both upper and lower classes and Negroes and whites, have worked with first and second graders: interviewing, playing games, reading, printing, explaining science demonstrations, making up stories, playing with puppets, etc. Students discover that "subject matter" can become the currency for gratifying interpersonal activity which makes it come alive and seem valuable

Teachers who have set up such activities tend to be enthusiastic about how well they worked, or, in some cases, might have worked. Certainly the possibilities are impressive, ranging from getting ten times as much teaching at no extra cost to salvaging the egos of unmotivated or maladapted individuals. Other possibilities include reducing or circumventing barriers between races or cultures and between generations; changing the school's climate from competitiveness to cooperation; capitalizing in heterogeneous, inter-age, and non-graded groups; getting children to show us what sorts of teaching materials are needed. For many persons, the highest initial priority would be to get every child to be able to read and write well enough so that he could stay in school through high school graduation.

The Plan

Forty teachers, principals, psychologists, and others met at the Center for Continuing Education, University of Chicago, July 1–12, with the possibility of an additional week of "individual study" for those wishing graduate credit. The participants became acquainted with what has been done and developed plans and programs for more effective uses of students by each other. We explored, through role playing and other devices, the dimensions of the "caring" and "helping" relationships as the social context for learning activities. We examined inquiry and other teaching strategies to see at what points and in what ways "helping" could be introduced with profit for learning. Throughout these investigations we were concerned with the "youth society" in the school as the instrument most determinative of the quality of self-help for boys and girls.

The staff, under the direction of Herbert A. Thelen, was the present research team of a five-year NIMH-sponsored investigation of activities through which students can help each other "get with it". Neighborhood agency personnel, students of all ages and conditions, and behavioral scientists at the university were available as needed.

The Conference Activities

Activities, both planned and emergent, were the instruments through which the conference purposes were sought. The conference did achieve its purposes. Therefore, partly for the remembrance of our colleagues and partly as suggestions for the design of further workshop-conferences, we wish to make note of some exciting and productive activities.

Development of Group Purposes – Creation of "Interest Groups"

The topic of the workshop – the "helping relationship" as exemplified in students tutoring, inter-age classes, and group projects – was known to all. Most of the participants were invited because they were known to have worked with implementing procedures and methods. They came with the expectation of reporting their experiences, and more than half of them brought slides, video-tapes, or short movies, in some cases made especially for presentation to the conference. Thus there were clear and commonly held expectations about content and some procedures before the first meeting began.

The first sequence of activities was designed to create a common realm of discourse, a common vocabulary; to explore the range of dynamics that would be salient; and to find foci or pay-off questions that could give clear purpose to thinking together.

An opening statement stressed the "naturalness" of helping as a normal transaction among interdependent men. Each participant was asked to write a brief account of an incident which strikingly exemplified giving or receiving help. Then pairs of individuals interviewed each other about their incidents. Next, self-chosen sub-groups of six convened and listed the helping "ingredients" represented in or stimulated by the interviews. Each group designed a role play scene, building in several characteristics of helping situations. The development of these scenes was a stiff challenge, and several groups continued over lunch. In the afternoon general session, a "listening panel" of three was appointed and told they would have the last word after the presentations to summarize, underscore, elaborate, or otherwise enhance the meaning of the scenes. The five scenes were presented; the audience attempted to identify the helping ingredients planted in each; and each sub- group responded and revealed its own thinking. The summarizing comments underscored the major point that the "helper" is as much helped as the "helpee"; and the panel's efforts sensitized the group to possible universals in the helping relationship.

Having created scenes to demonstrate concepts of helping, the next step of inquiry was to see if the concepts could be used to guide observation of "natural" helping episodes. Accordingly, the next morning, an assortment of children, ages four to fifteen, were brought in and told to divide at will into pairs or small groups to play with any of the toys, art materials, and other equipment in the room. The conferees observed the children and the ways they used each other from the moment of entering the strange room; they also discussed their observations in small groups, trying to collate their individual experiences. In the general session that afternoon, the small groups reported the helping "dimensions" they had been able to discern, thus, in effect, providing an operational definition of "helping".

Up to this point, the workshop had explored its own concepts of helping quite apart from any techniques or procedures of tutoring or inter-age practice. The next step was to set goals for the remainder of the two weeks: what did we want to explore further, find out about, experiment with, produce (e.g. manuals). Subgroups discussed this question for an hour. Staff members who had sat in with the sub-groups brought the thinking of the groups to a staff meeting. The feedback was reflected on by the staff, and a series of "interest foci" was tentatively identified.

The next morning's general session considered the proposed foci, rehearsed what would be involved in dealing with each, and then tested to see how many persons would select each topic. One topic was eliminated, leaving five. During the break, individuals signed up for the topic they wished, and thus were formed the "interest groups".

The interest groups had the task of assimilating all the remaining experiences of the workshop, the 23 presentations, experiments with children, readings etc. On the last day, each group would report its reflections on this very large and exciting input; these reports, here presented, would be regarded as the major public and communicable outcomes of the workshop.

From the moment of inception of the interest groups, there was a consistent sense of goal-clarity and thrust, as well as a clear demand for production and the rapid development of expectations for considerable gratification from each other for individual contributions.

The Pooling of Experiences – Participants as Experts

Aside from a ritualistic opening statement the first day and a short lecture toward the end, there were no lectures by staff authorities. The presentations were made by participants; and they talked about their work freely, sometimes humorously, and always with conviction. The general principle that the most persuasive "change agents" are one's peers who have tried it, was amply borne out. The few participants who did not work in classrooms became very eager to try their hand at teaching.

Interest held up through all 23 presentations. The very last one added, as had each of the others, its own increment of richness, its own novel elemen tof procedure, context, or goal. Across the range of presentations, virtually every imaginable dimension of helping situations became explicated in one way or another. Time was found for discussion of each report, even though an extra evening meeting had to be scheduled. It was found that colored slides were extraordinarily communicative, and that they added considerable "surplus meaning" to the verbal comments.

The role of "expert" was challenging and gratifying. Members put a lot into their reports; and, because they spoke informally, they became known to each other. Thus, both explicitly and implicitly, there was development of functional belongingness, and the investment of personal effort, rewarded by interactive feedback, gave the conference unusual "potency" for its members. The fact that several persons came from out of town for one day simply to lay their reports alongside those of the members enhanced the conference's prestige and comprehensiveness.

Working with Children – the Operational Level

Children were active participants on three mornings. On the first occasion, they were observed; they produced phenomena against which sub-groups could test their categories of "helping" behaviors.

On the second occasion, ad hoc sub-groups designed small experiments in which the children were subjects. These experiments included comparing interaction when the helper was the same age, years older, and years younger than the helpee; when the task was "academic" rather than "non-academic"; when extrinsic rewards were offered; etc. The sub-groups discussed their findings and later reported impressions to the total group. The third occasion was much like the second, except that more adults impulsively set up little spur-of-the-moment activities or interviews. There was very little reported to the whole group, and yet the experimenters rated the experiences as most worthwhile – suggesting that private goals and "individual" quests with non-verbal components were salient. The fact that this was the first experience of many of the group with colored children would be consistent with this view.

Staffing, Solidarity, and the Future

Considering the amount of challenge and of sharing among participants, one would expect considerable solidarity to develop. This was indeed the case, as shown especially in the relaxed way in which the participants dealt with unstructured periods: meeting alone or with whichever other persons they had business with, in the interest or experimenting groups, or in pursuit of further knowledge of each other's back home experiences.

Three factors not yet mentioned in these notes undoubtedly exerted a benign influence on the group's development of strength. First, the fact that nearly all the out-of-towners lived in the same residence hall (Center for Continuing Education), and that evenings were usually unscheduled; second, the fourth of July picnic; and third, the staff composition. With regard to the residence, people needed each other and were accessible to each other; the usual psyche-group interactions bolstered individual adequacy in the new situation. The fourth of July picnic, at a beach located seventy miles from town, came at the right moment, required the right amount of ad hoc organisation, and offered the right amount of freedom of choice and association for enhancement of autonomy combined with formation of relationships.

The staff also contributed. The staff consisted of the Director and his eight research assistants (graduate students) involved in a five-year NIMH research project. This rather large team had been working together for three years, and had become a group whose members respected, liked, and cooperated with each other. The assistants took out-of-towners sightseeing, helped presenters with equipment, brought in and took care of the child-subjects, convened some of the groups, and enjoyed talking with participants and presenting some of their experiences. Their own strength as a team provided a nucleus for strength to develop in the more extended group. The delegates were deeply impressed with the warmth, helpfulness, and regard the staff had for each other and for the other participants. The Director felt that the operation of the assistants was a major factor in the obvious success of the conference.

The group has many notions about ways to continue our relationships and mutual support. Our report was written in the week after the conference was over; its authors are the seven who stayed over an additional week so as to earn university credit. The author committee is still under the influence of the total group; we are trustees (or midwives?) officiating at the next step in working together. The response to this document, reported on the forms circulated with it, will help determine the most appropriate next steps, both for further enhancement within the group and for reaching out toward other persons with whom we can find common cause.

HERBERT A. THELEN, Chicago

BOOK REVIEWS – BUCHBESPRECHUNGEN
ANALYSES BIBLIOGRAPHIQUES

CALLAHAN, STERLING G., *Successful Teaching in Secondary Schools. A Guide for Students and In-Service Teachers.* Glenview, Ill.: Scott, Foresman 1966. pp.566. $ 7.95.

Der Autor handelt die bewährten Unterrichtslehrekapitel über Unterrichtsprinzipien, Unterrichtsplanung, Gruppenunterricht, Disziplin, Motivation und auch programmierten Unterricht und *Team Teaching* mit Beispielen aus der eigenen Praxis ab. Weshalb sollen diese Richtlinien und Empfehlungen nur für höhere Schulen und nicht auch für die Grundstufe gelten?

Der Autor hätte dem Didaktik-Studenten die Lernarbeit wesentlich erleichtern können, wenn er an wenigen (1–3) Beispielen aus der Unterrichtspraxis die Notwendigkeit aller angeführten Richtlinien und Empfehlungen aufgezeigt und damit eine weitaus engere Verbindung zwischen Theorie und Praxis hergestellt hätte.

Die zukünftige, heute bereits absehbare Entwicklung der Schule in Richtung Schulunternehmung als gesamtstaatliche, wirtschaftlich selbständig agierende *Nongrading*-Gesamtschule wird nicht aufgezeigt.

Für eine weitere Auflage des Buches wird die Einrichtung eines Autoren-, Literatur- und Begriffsverzeichnisses im Anhang dringend empfohlen. Zusammenfassend: Ein Buch, das dem Lehrerstudenten für die Übergangszeit von der traditionellen Schule zur Schule der Zukunft gewisse Dienste zu leisten vermag.

BERNHARD MÖLLER, Zams, Österreich

CROPLEY, A.J., "Creativity". Series: *Education Today*. London: Longmans 1969. pp.121. Paperback.

On the basis of recent investigations in the United States, England, and Canada, Cropley summarizes the status of controversial issues concerning creativity and education. He takes the position that "intellect is not synonymous with the ability to respond in the usual logical and lawful way to a particular kind of test item." According to him, the score on traditional intelligence tests provides only a measure of the extent to which a person is capable of thinking in a certain way characterized by its emphasis on logic and correctness. He admits freely that the kinds of thinking that lead to high scores on intelligence tests tend to be closely related to success in our schools but argues that this causes us to forget other kinds of thinking important to society.

Using reported research, Cropley shows that differences in styles of thinking between those who prefer the divergent mode (generally the creative mode) of thinking and those who prefer the convergent mode appear to be related to differences between such individuals in the area of personality. He interprets the research as characterizing the divergent thinker as impulsive, non-conforming and willing to "have a go" at things and the convergent thinker as impulse suppressing, conforming, and unwilling to let themselves go. In the opinion of the reviewer, a more accurate interpretation of this body of research would be that the creative person is neither compulsively impulsive nor compulsively impulse suppressing but that he is free to express his impulses in healthy ways. He is neither compulsively

conforming nor compulsively nonconforming but is free to conform or nonconform in terms of what is "right, true, beautiful, etc."

Case studies presented by Cropley from his own research support the reviewer's interpretation. On the basis of the Minnesota Tests of Creative Thinking developed by the reviewer, Cropley identified a group of Canadian children as highly creative. Kathy, one of the most creative of these, is not unruly, impertinent, a day dreamer, nor a trouble maker. She is active, alert, realistic, ambitious, and in control of her emotions. This is in line with much of the reviewer's experience. He is confident that this pattern would fit most creative children, if they could experience even moderately favorable home and school situations.

On the basis of his own studies and those of Guilford, Getzels and Jackson, Torrance, and Hudson, Cropley makes several rather firm conclusions. First, there is an aspect of intellect that may appropriately be labelled "creative," keeping in mind certain shortcomings of the term. Second, this aspect of intellect can be estimated by appropriate tests. Third, there is a significant relationship between creativity and academic achievement. Fourth, highly creative children tend to have a special relationship with parents and the tendency to think divergently is related to child-rearing practices. Fifth, appropriate teaching methods can encourage children to think creatively, or discourage them from doing so. The experiences of this reviewer continue to support these conclusions.

Croply believes that the term "creativity" is used far too loosely and to many it means behaving in undisciplined and unconventional ways. He thinks that behaviour should meet certain criteria before being regarded as creative and suggests: worthwhileness of results, surprisingness, and relevance. These criteria are somewhat similar to those suggested by Hans Selye, namely, "true, generalizable, and surprising in the light of what was known at the time the idea was produced."

The author describes studies conducted in Canada with similar results to those of Getzels and Jackson and Torrance. He proposes the idea that creativity and intelligence are interdependent rather than separate functions. This proposal would probably clarify some of the misconceptions that have risen concerning the distinctions made between these two functions. It is quite compatible both with research results and almost all of the present-day models of the creative problem-solving process.

Cropley believes that many teachers ignore the results of recent investigations concerning creativity and resist encouraging creative behavior because they confuse such behavior with misbehavior. Furthermore, he observes that teachers misinterpret a questioning attitude as a hostile one. Teachers regard such students as a threat to discipline and are bothered by their unexpected responses, embarrassing questions, and diversions that seem to waste time. Cropley offers suggestions whereby the teacher can use the divergent thinking skills of his pupils to motivate and increase classroom learning. In fact, he might have gone even further in pointing out the built-in motivation of creative ways of learning.

An important point made by Cropley and rarely made by other authors is that a school curriculum which aims at using students' creative abilities will not be lost on less creative children. He points out that all children are capable of asking and wondering, of guessing and speculating, of questioning and supposing. He contends that instructional materials that require children to learn by rote rather than by understanding lack built-in power to make "the student seek more and more information."

This volume should be very useful in bringing teachers up-to-date concerning recent investigations concerning creative thinking and in providing suggestions for a more creative, humane kind of education.

E. PAUL TORRANCE, Athens, USA

GLASER, HERMANN (Hrsg.), *Team Teaching – konkret. Schulversuche auf dem Weg zum beweglichen Unterricht.* Freiburg: Rombach 1969. 135 S. DM. 14.

In Nürnberg und im Pädagogischen Seminar der Universität Erlangen-Nürnberg wird seit Jahren bedeutende Arbeit auf dem Gebiet des beweglichen Unterrichts getan, was auch z.B. die Veröffentlichung *Modell eines neuen Gymnasiums* (1966) bezeugt. *Team Teaching – konkret* behandelt Versuche, die in Nürnberg und auch in einer Bamberger Schule unter Beschränkung auf gegenwärtige Verhältnisse in der Schulorganisation und Schularchitektur stattfinden. So werden aus dem Bereich des Gemeinschaftskundeunterrichts (Geschichte, Geographie und Sozialkunde) Experimente berichtet, die zwar die drei Fächer in ihrer Verschiedenheit erhalten, aber durch übergreifende Themen und durch Parallelisierung, Verbandsunterricht und Blockstunden den Unterricht koordinieren. Die Auswirkung der Koordinierung auf die Organisation der Lehrstoffe, der Lehr- und Lernmethoden (Lehrervortrag, Selbststudium, Kolloquien, Tests usw.), wie auch die sich ergebenden Möglichkeiten etwa der Unterrichtsbeobachtung durch Fachkollegen oder der Hinzuziehung von Gastdozenten, werden erwähnt. Fragebogen zur Schülerbewertung, wie auch statistische Auswertung der Schülerbefragung und tatsächliche Beispiele der von den Schülern gegebenen Antworten liegen vor. Die Kommentare des Pädagogische Seminars der Universität Erlangen-Nürnberg weisen u.a. auf die Tatsache hin, daß die Schüler, die sonst in Parallelklassen einer Altersstufe unterrichtet werden würden, zu einer gemeinsam lernenden Großgruppe zusammengefaßt sind, sich aber als Klassen durch das Vorhandensein kleinerer Lerngruppen wieder zusammenfinden. Dieser großen Schülergruppe steht nun ein Lehrer-*team* gegenüber, wobei es jedoch weder *team leader* noch Hilfskräfte gibt. Dagegen ist, wie in Amerika, dem Großgruppen-Unterricht die eigentliche Stoffvermittlung, den Einzelstunden die Vertiefung und Ergänzung übertragen. Wesentlich in den Kommentaren des Seminars ist auch der Hinweis auf die Forderungen in Bezug auf Organisation, architektonische Konzeption, Lehrmittel und andere Voraussetzungen, ohne die Fortschritt auf dem Gebiet des beweglichen Unterrichts nicht erwartet werden kann.

Unter dem Titel "Ein abgebrochener Versuch" wird, aus der Sicht eines Schuldirektors in der Nürnberger Behörde, über einen 1965 unternommenen Versuch berichtet, der erste Erfahrungen im Unterricht mit Groß- und Kleingruppen und Lehrer-*teams* zu sammeln beabsichtigte.

Unter den bei diesem Experiment entstandenen Schwierigkeiten werden besonders mangelnde Kooperationsfähigkeit und Planungsbereitschaft, zeitliche Überbelastung der Lehrkräfte und unzureichende Ausrüstung der Schulen mit Lehrmitteln erwähnt.

Der aus Bamberg berichtete Schulversuch im Anfängerunterricht erstrebt Differenzierung, Individualisierung und Sozialisierung des Unterrichts und will "von der verwalteten zur pädagogischen Schule kommen". Lerngruppen zur besonderen Förderung der Schwachen und Besten, Blockstunden zur Reduktion der Fächerzahl im Schultag, Gleichzeitigkeit mancher Parallelklassen und *Team*-Arbeit der

Lehrer sind einige der Maßnahmen dieser Schule, von der positive Beurteilung des Experiments durch die Eltern berichtet wird.

Andere Beiträge kommen von einem Turnlehrer, der über ein durch Verbandsunterricht in der Freiluftsaison und Unterricht in Leistungsgruppen die Leistungen der Schüler und die gegenseitige Ergänzung der Lehrer verbesserndes Gesamtvorhaben berichtet, und Kommentare eines Architekten über die erwähnten Innovationen, zu denen sich für ihn auch die Tagesschule und die 5-Tage-Woche gesellt. Auf die sich ergebende Mobilität und Kommunikation sollte man nach seinen Bemerkungen, die nicht als Entwurf sondern als Denkmodell gedacht sind, u.a. durch radiale Anordnung der Fachklassentrakte um eine Eingangshalle, durch Gemeinschaftsanlagen (Aula, Mensa, Studienräume usw.) und durch z.T. mit beweglichen Wänden ausgestaltete Unterrichtsräume Rücksicht nehmen.

In seinem Nachwort betont Werner Loch zunächst die Notwendigkeit, Reformen sorgfältige experimentelle Arbeit vorauszuschicken, wobei klare Hypothesen, ein gut definierter Validierungsprozeß, Versuche mit Experimentier- und Kontrollgruppen und Beschränkung auf isolierbare Faktoren, die in der Versuchsgruppe gegenüber der Kontrollgruppe verändert werden, von besonderer Wichtigkeit sind. Auch Auswertung und Darstellung der Ergebnisse durch der Objektivität fähige Forschergruppen werden von W. Loch für erziehungswissenschaftliche Experimente verlangt.

Aus der Sicht des amerikanischen Rezensenten erscheinen die in diesem Bande berichteten Versuche nicht revolutionär, da man in den USA z.B. die 6–7 Unterrichtsstunden des normalen Schultages selbst im Anfang der *Team Teaching*-Versuche bereits durch Kombinationen der 15–20 Minuten langen "modules" ersetzte und zudem im ganzen Lande experimentierte. Aber die Gewilltheit der Autoren, die Versuche vorher genau durchzudenken – gerade deshalb, weil sie im Rahmen der gesetzlichen, organisatorischen und finanziellen Gegebenheiten durchzuführen waren – und von Schülerbefragungen und abgebrochenen Versuchen zu berichten, d.h. nicht nur Erfolge darzustellen, all das ist eindrucksvoll. Die hier vereinten Artikel stellen einen wertvollen Beitrag zum Erfahrungsaustausch dar. Darüber hinaus enthält dieser Band auch Ideen nicht über *Team Teaching* und beweglichen Unterricht in den beiden bayerischen Städten, sondern auch über die Methodik, die künftiger Arbeit auf diesem Gebiet zum Erfolg helfen sollte. Schließlich sind die berichteten Versuche, wie auch die für die weitere Arbeit vorgeschlagene Methode, für Erziehungswissenschaftler in anderen Ländern von großem Interesse.

WALTER HAHN, Utah, USA

HUSÉN, TORSTEN, BOALT, GUNNAR, *Educational Research and Educational Change – The Case of Sweden.* Stockholm/New York: Almqvist and Wiksell/John Wiley 1968. pp. 232.

Educational Research and Educational Change by Husén and Boalt is a unique work. It is probably the only monograph of its kind in the world in which a fully controlled, and subordinated to scientific research, development of the state educational system was shown. Reading this book provides evidence that Sweden is one of a few highly industrialized and wealthy countries which could consciously take advantage of its richness to create the best possible educational system connected with pedagogy as a science.

"This book is an attempt to give a survey of the major research endeavors in the behavioral sciences which in one way or another have been related to the changes that have taken place in Swedish education since the middle of the 1940's" (Preface). Showing simultaneously how the educational policy of a state both depends upon and influences the empirical scientific research, the authors managed to provide evidence that this mutual dependence is possible and profitable for a state – which can be new for the educational policy makers, as well as for the pedagogical sciences – which could surprise some of the professors of pedagogy.

As it is shown in the book, there have been three primary problems which have in the last twenty-five years dominated the research and organizational attempts that have framed the development of Swedish education:

- research concerning the determination of the educational goals of Swedish schools,
- curriculum research,
- research concerning the problems of the organizational structure of the educational system.

The authors devote the chapter, "The changing goals of the Swedish School", to the first problem, the chapter, "Curriculum research", to the second and the remaining five chapters: "School differentiation and individual differences", "Teachers' attitudes to bringing up students, and school reform", Home and school", "Assessing the reserves of ability", "Education, occupational career, and social mobility" are devoted to the third one.

The search for an appropriate school model would lead to an ability to reach two categories of goals: (1) To give an individual the education most adequate to his or her abilities, and (2) to educate an individual in such a manner that he or she can best meet the needs of modern society as well as those of the labour market. The former category is based on a proper organization of the school system based on the differentiation and utilization of the reserves of ability; the latter on a detailed and full determination of the principles governing the selection of educational contents and on preparation of appropriate curricula. The logical scheme of the book, thus outlined, is scrupulously observed by the authors.

Swedish educational research as well as analysis of the changes, to which the country is subjected, have led the authors to statements concerning both the range and the character of knowledge which is common for all the pupils in a given population. Knowledge and skills gained at school should be possibly general, which means that they can be applied in a broad range of unforeseen situations occurring in the life of the society and in the exercised profession. "The school would have to educate for flexibility" (32) which is composed of "communication skills, the ability to cope with the quantitative aspects of life, the ability to apply knowledge, the ability to find new knowledge, the ability to solve problems" (32).

The authors argue that flexible education is necessary if a pupil is to be able to cope in a world which changes so rapidly. It seems to us, however, that this statement, right as it is, is too limited since neither the statement itself nor the discussion of it takes into account the fact that the education acquired in school should prepare not only for coping with the changing world but also for taking a conscious managerial part in the occurring changes. A graduate should possess not only the abilility of adapting himself to the changes but also promoting and directing them.

The authors may also be charged a fault for not exposing enough the fact of acquiring the "academic" knowledge by the pupils. This charge would, however, be seemingly so since the next chapters prove that this problem is also given a great deal of attention though not in the direct context of the problems of goals.

The whole series of curriculum research was to determine: (1) actual teaching practices, (2) what knowledge and skills the individual needs as a citizen and employee, (3) learning outcomes. The authors are convinced that on this basis it is possible to design the curriculum rationally and with good chances of success, or at least to determine what should be included in it in order to prepare a pupil for future life and work. The very research idea and primarily the research design deem to open new possibilities to the researchers of the principles governing the choice of educational content. The authors of the project were the first in the world to approach this type of research with such precision.

The research ran through the following stages: (1) breaking down the educational content, taken from the operating curricula and handbooks, into relatively separate elements, (2) composing, on this basis, a questionnaire for the teachers, who were to fill in the amount of time devoted to each of these elements in the process of teaching, the methods they applied, the results they achieved, (3) teachers of schools to which the students come after having graduated from a school of a lower level, estimated the level of students' preparation according to the list of elements and formulated their opinions as far as the usefulness of each of these elements was concerned, (4) the employers and superiors evaluated their employees in these respects, (5) similarly a school's graduates, presently the job holders, were so evaluated, (6) ascertaining the real learning outcomes by means of tests.

The research reached the declared aims and opened the way for similar research dealing with other subjects and in other grades. Though the authors of the book notice all the restrictions resulting from the accepted methodology, they estimate their research sanguine; they are, as it seems, right. They do not, however, take into account the fact that (and here we partly come back to the conception of educational goals) when an adult evaluates certain information or skill as useless in his or her life, it may mean not only that this element of the curriculum was needlessly put into it but also that the school has educated a man of poor personality who needlessly limits his intellectual, social and other needs. It may finally mean that an adult has not found a place for himself in the society such that it would require a universal activity on his part; having limited the possibilities, life has made his personality poorer, which must finally limit an individual's actual needs.

If the school education is to develop all the abilities of an individual certain conditions have to be fulfilled, among which are the following: education has to be differentiated according to a person's ability; it is necessary to liquidate all the negative influences of the non-intellectual factors which make it difficult or impossible for an individual to acquire the highest education of which he is capable.

The first of those conditions can be achieved by an appropriate framing of the educational system subordinating it to the principle of differentiation: school type differentiation, track differentiation, class differentiation and ability grouping. The authors relate the broad range of research leading to the most appropriate organizational solutions. The fragments dealing with the individualization of learning or the pedagogical differentiation, as it is called by the authors, are much poorer. This is caused by a lesser stress laid on these matters by Swedish research studies, though in some countries, as for example in Poland, the proportions are exactly opposite.

Swedish researchers, and among them the authors of the book, put much effort and invention into the problems of discovering and evaluating the reasons for which the school does not include and educate all the appropriately gifted young citizens. The outcome of this research is to serve the purpose of fulfilling the other of the above-mentioned conditions, namely the liquidation of all non-intellectual influences which make education on a level appropriate to abilities impossible. In this respect, however, a reader feels that not enough attention has been devoted to the problem of the potency of the educational system and to the part-time studies of adults.

The authors understand the problems of differentiation generally: it is placed against the background of home environment, social mobility, and the level of aspirations marked by social factors. They connect these problems with the questtions of teachers' training, their attitudes and the dependence of their work on the home environment. These are not merely speculations, but each conclusion, as it is done in the entire book, is derived from empirical research. The research itself is good since the methodology of each part, luckily enough presented to a reader in detail, may serve as an example of a careful and ingenious plan, of making use of the gathered evidence exhaustively and in all its aspects, and of the ability of utilizing every uncommon situation in the school practice.

Both the process of constructing the Swedish school system and the arrangement of the book are examples of logical consequence. After having read Husén's and Boalt's book, a question arises: "On which research problems will the stress now be laid?", and the answer follows: "It is concluded from the book that stress will now be laid on teaching practices". Such an assumption is confirmed by a newsletter "School Research", edited by the National Board of Education, Stockholm 1968, 7, in which this leading direction of research is signalled in the sub-chapter "Direction of development work".

And this is the final reason for reading the book written by Husén and Boalt as it provides an unusual intellectual satisfaction which inspired both deliberations and new research ideas.

KRZYSZTOF KRUSZEWSKI, Warsaw

ISMAIL, A. H. and GRUBER, J. J.. *Motor Aptitude and Intellectual Performance*. Columbus/USA: Charles E. Merrill 1968. pp.199.

Integrated development and the relationship between brawn and brain, movement and thought have long offered a field for myth, prejudice, speculation and insight. As long ago as 1938 R. E. Roper in the United Kingdom wrote a book *Movement and Thought* and by deductive reasoning advanced hypotheses of associated development and causal relationships between physical and mental processes. It is only since 1950 that scientific research techniques have been applied to the testing of hypotheses about the relationship of motor responses and learning. Ismail and Gruber give 67 references in their bibliography. In reviewing the literature the authors found that strength, speed, power and growth items do not correlate well with intelligence and academic achievement but that virtually no one had investigated the relationships between items measuring motor aptitudes of balance, co-ordination and kinaethesis. Proceeding from earlier research on the testing of motor aptitude in pre-adolescent boys they took items of a kinaesthetic balance and co-ordination nature that were unfamiliar to their subjects in order to investigate their relative importance in predicting intellectual achievement.

Thirty-seven simple physical measures and tests are described and correlations were made between these test results and Otis IQ scores and Stanford Academic Achievement scores. The results are separated for boys and girls and for high achievers, medium achievers and low achievers. Some most interesting conclusions emerge: for instance that there is a sex difference in the predictive power of motor aptitude tests for estimating IQ and Academic achievement favoring girls rather than boys and that the predictive power of these tests favor medium achievers, high achievers and low achievers in that order. Achievement can be predicted more accurately than IQ.

Each chapter is preceded by a number of guiding questions and is concluded with a summary of results and a discussion where appropriate. This arrangement makes the book readable while fifty-six tables giving matrices of correlations, factor loadings, F-test and t-test scores provide the research worker with the evidence for the conclusions and the basis for further work.

The final chapter investigates the relative effectiveness of an organized physical education programme on IQ and academic achievement scores. The particular programme employed had no effect on IQ scores but had a favorable effect upon academic achievement, a result which surprised the authors since the programme was conducted for no longer than one year. As they themselves point out, a different programme might have very different results.

The importance of Ismail and Gruber's work lies in the demonstration by correlation and factor analysis that co-ordination and balance abilities on the one hand are so closely related to academic and intellectual achievement, on the other that improvement in one area might well lead to improvement in the other.

Further research is needed to confirm the findings of Ismail and Gruber but they have produced enough evidence now to enable teachers of physical education to re-examine their approach to education and the content of their programmes, that is, if they are interested in integrated education. For those who are interested solely in the athletic achievement of their pupils this fascinating work will be of limited interest.

P. MACINTOSH, London

LEFÈVRE, LUCIEN, *Le maître observateur et acteur. Conduite de la classe. Orientation scolaire.* Paris: Ets. Sociales Françaises 1968. pp.118.

En France, comme en bien d'autres pays, la formation des maîtres ne comprend pas encore – à côté de bien d'autres lacunes – une étude approfondie de la psychologie. Or, il semble évident que ceux qui voient les élèves tous les jours en classe sont les mieux placés pour les observer et pour collaborer à leur orientation. Encore faut-il y être préparé.

Après de longs essais sur le terrain, L. Lefèvre a élaboré un guide pratique à l'intention des maîtres du second degré surtout.

Je ne pense pas que ce soit le guide idéal, car je crains bien qu'il conduise souvent à des notations ambiguës. Par exemple, nul ne conteste l'intérêt de savoir quelle est la résistance d'un étudiant à la fatigue. Mais, quand les maîtres notent: Assez bien – fatigable – médiocre – moyen – etc., comment interpréter ces notations?

On pourrait citer des dizaines d'exemples de ce genre. En fait, la méthode d'observation s'appuie à tout instant sur des échelles d'évaluation du type le plus fruste.

Aussi longtemps que chaque échelon n'est pas défini en termes de comportements précis et univoques, nous vivons au royaume de l'impressionnisme.

Ceci ne signifie pas que je dénie toute valeur à ce livre. D'abord, je suis certain qu'un psychologue aussi averti que L. Lefèvre compense le flou des instruments par un sens clinique aigu. Ensuite, je crois que la chose la plus importante est d'amener les maîtres à focaliser une bonne partie de leur attention sur la psychologie de leurs élèves. Une fois ce réflexe installé, il ne sera pas difficile d'introduire plus de rigueur. L'idéal n'en serait pas moins de réduire le champ d'observation et d'habituer, dès le début, à la précision.

L. Lefèvre réussit à publier une bibliographie de quatre pages où ne figure pas un seul ouvrage en anglais. Il est ainsi amené à passer sous silence des livres qui répondent au même souci que le sien et qui pourraient certainement apporter un complément d'éclairage utile. Je pense, par exemple, au petit livre que Millie Almy a publié à partir des notes de Ruth Cunningham. *Ways of Studying Children. A Manual for Teachers* (New York, Teachers College Press, 1959).

GILBERT DE LANDSHEERE, Liège

MAJAULT, JOSEPH, *La révolution de l'enseignement*. Paris: Laffont 1967. pp.241. FF 10.20.

L'auteur décrit, éclaire, explique, la révolution de l'enseignement telle qu'elle se produit sous nos yeux. Car certains d'éléments de cette révolution demeurent "mystérieux", non seulement pour les profanes, mais aussi pour bon nombre d'enseignants qui, d'une manière ou d'une autre demeurent attachés aux traditions "qui ont fait leurs preuves". Ce qui frappe à la lecture de cet ouvrage, c'est le remarquable talent de l'écrivain, alors que le thème est plutôt aride. C'est que J. Majault n'est pas seulement un pédagogue de premier plan, il a publié également huit romans (le dernier, en 1969) et huit études et essais littéraires. Dans la première partie de l'ouvrage, nous assistons à une description saisissante des transformations multiformes, à la fois brutales et subtiles de notre univers matériel, technique, social, humain. Certes, toutes les époques historiques ont été des "périodes de transition", qui exigeaient de l'homme de nouvelles adaptations. Il est vain de croire que "jadis" il y a eu des périodes vraiment stables; et si l'humanité a connu des périodes de décadence, il n'y a jamais eu de "retours en arrière" ni de recommencements". Mais les bouleversements auxquels nous assistons, présentent effectivement un caractère entièrement nouveau et "éruptif", tant au point de vue qualitatif que quantitatif. Or, ces transformations ont une incidence considérable, sur l'homme et impliquent la création d' "un nouveau type d'homme". Les différents sursauts auxquels nous assistons dans le domaine de l'éducation, – réformes en cascade, – ne sont que des symptômes de tentatives souvent inconscientes tendant vers ce but: former des hommes qui soient capables de vivre dans un monde en perpétuelle transformation. En premier lieu, les compétences de l'homme doivent être constamment réajustées, transformées, reconverties, perfectionnées. De plus, le travailleur isolé du type artisan est de plus en plus rare; on travaille en équipe, non seulement à l'usine, mais aussi au laboratoire de recherches; c'est aux enseignants qu'il appartient de trouver les solutions face à cette tâche considérable, alors qu'ils vivent dans un état de relatif isolement par rapport au monde extérieur. Il nous faut réformer globalement nos idées tant au sujet des buts que des moyens de l'éducation. Pour ce faire, "il faut équilibrer la réflexion aux principes d'identité qui fixent le développement de l'être et la mobilité des circonstances qui servent de cadre à ce développement" (p.71).

Le difficile ici, c'est que nous ne pouvons pas agir en vertu de principes fixés d'avance, mais en partant de l'examen des faits, qui sont mal connus, car ils sont fugitifs, changeants. Toute mentalité "prospective" s'appuie sur des données chancelantes ou fuyantes.

Dans la seconde partie de l'ouvrage, l'auteur décrit les "voies et les moyens" de l'action éducative, esquissant ainsi un "inventaire de l'avenir". En adoptant le tableau des cinq niveaux de l'organisation scolaire proposé par Hilker, J. Majault insiste sur la nécessité de porter l'attention sur l'enseignement élémentaire, où, plus qu'ailleurs la qualité du personnel enseignant doit être particulièrement affirmée. A défaut d'une telle réforme, la prolongation de la durée de l'enseignement ne servirait à rien. Entre 11 et 16 ans, l'enseignement serait progressivement différencié. J. Majault estime qu'environ 35 % des élèves devraient pouvoir suivre le "cycle long" de l'enseignement secondaire. Il esquisse dans les grandes lignes les programmes des différentes matières; pour l'essentiel, il s'agit des programmes actuels (en France), mais on insiste ici sur la nécessité de modifier les méthodes d'enseignement. Ces méthodes devront relever considérablement le pourcentage de ceux qui seront aptes à suivre le cycle long. Pour cela il faut apprendre à utiliser au maximum la spontanéité des jeunes: leur curiosité, leur désir de découverte et il faut inculquer aux jeunes, le plus tôt possible l'aptitude à saisir "l'ordre des liaisons et des relations". En ce qui concerne la délicate question des examens, J. Majault préconise "un contrôle permanent qui suivrait l'enfant tout au long de sa scolarité". Cela suppose à tous les niveaux une formation très poussée psychologique et pédagogique des enseignants, et bien entendu un développement considérable des recherches dans ces deux domaines. On peut s'en étonner, mais en France, au niveau de l'enseignement supérieur, il n'y a que peu d'années que l'on a créé des chaires de pédagogie (ou des sciences de l'éducation) et ce n'est qu'en 1967 que l'on a créé une maîtrise sanctionnant ces études. Il faut également prévoir une formation continue des éducateurs. L'ouvrage, qui s'adresse surtout à un public français, comporte en annexe, les principaux textes de la réforme de l'enseignement de 1959, ainsi qu'un tableau des effectifs scolaires (en France), et leur évolution (p. 190 et p. 239).

Il semble que J. Majault montre surtout les difficultés des problèmes que nous avons à résoudre. En fait, nous nous trouvons en face d'une quadrature du cercle: nous devons augmenter considérablement le nombre des enseignants et de ce fait, la qualité de ces éducateurs n'ira-t-elle pas en se dégradant? Essayons d'être optimistes et espérons qu'avec le temps, la profession enseignante tendra à attirer "les meilleurs" parmi les hommes. . . .

ALEXANDRE VEXLIARD, Ankara

MILLER, RICHARD I. (ed.), *The Nongraded School: Analysis and Study*. London: Harper and Row 1967. pp.289.

The nongraded movement is one of the most important concerns of American education and, as Richard I. Miller states, it also rates as one of the most misunderstood and confused developments. This book, consequently, merits careful attention.

*Analysis of Structure**). This is a practical book which is attempting to broaden the base of discussion on the nongraded school. It deals with matters such as purposes, procedures (strategies), criteria and research and aims to analyze, to study and to evaluate the nongraded school.

The Nongraded School consists of seven chapters, written by various authors', and four appendices. Chapter 1 is an outline of some historical perspectives; Chapter 2 is an elaboration of a concept of administrative leadership; Chapter 3 is a report on a system-wide change-over to nongradedness in the fourth largest city in the United States (Detroit); Chapter 4 is an outlining of forty-three criteria for evaluating a nongraded program; Chapter 5 is a discussion of the relationship between administrative structure and instructional function and includes a research design for this problem as it relates to a nongraded program; Chapter 6 is a number of commentaries by competent observers and Chapter 7 is a summing-up. The four appendices consist of extensive descriptions and reports on nongradedness by individuals and organizations.

Interpretation of Contents. Some basic terms are: nongraded school, individualized instruction, continuous progress, instructional leader, evaluation, structure-linked, structure-free, vertical organization, horizontal organization.

Following are some of the propositions expressed by the various authors:

A hurriedly instituted nongraded program often turns out to be merely a subdivision of the graded system.

A truly nongraded school requires considerable revision in instructional materials and evaluation procedures.

There are no two nongraded programs alike and therefore any program developed should be directed to satisfy the particular situation.

The removal of grade lines caused insecurity for some, and teachers varied in their readiness to plan together.

Forty-three criteria for evaluating a nongraded school program include the following six components: objectives, instructional materials, individualized instruction, grouping practices, evaluation devices, human factors.

The existing research fails to reveal whether some nongraded groups do better because of structural shifts, because of special tutelary efforts to help teachers individualize the teaching-learning encounter itself, to both, or to the mere effects of an experimental milieu.

As far as I can find out the nongraded primary substitutes nine or twelve intragrade levels based on reading achievement in lieu of the former three grade levels based on reading plus a variety of other indices of maturation.

One should not look for *the* model for a nongraded school.

Rather than seeking the model for a nongraded school, emphasis by those who study and write about nongradedness should be on developing models for implementation such as outlined by Gale and on models for evaluation such as given by Carbone.

Criticism. This is not a unified book in the sense that basic terms are carefully defined and/or used consistently, e.g. the nongraded school. Also, the propositions held by the various authors while frequently not contradictory are not congruent. Many different points of view are expressed and in the case of one author, . . . Erickson,

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*) This form of discussion is based upon ideas drawn from *How to Read a Book* by Mortimer Adler, Simon & Shuster, 1940. pp 398.

it appears that nongrading is worth not much consideration. As a consequence, this book only will increase the misunderstanding about the innovation.

The aim, according to R. Miller was to broaden the base of discussion and place the nongraded movement on a sounder basis. In my judgement this will not result as a consequence of this volume. How a sounder basis for nongradedness can result from this book, characterized by, lack of agreement on terms, propositions and phenomena, is impossible for me to understand. Possibly, as a consequence of the confusions, the muddied issues, and the misunderstandings, some investigator(s) may be stimulated to work-through the problem.

R. Miller's conclusion that one should not seek *the* model for a nongraded school but that the emphasis should be on developing models for implementation as outlined by Gale and Carbone, if followed, may improve education in general but not the nongraded movement. If the nongraded school is a viable concept, as we think it is, a more systematic, thorough, consistent formulation must be elaborated.

LOUISE TYLER, Los Angeles

TURNER, JOHN D. (ed.), *Using the Language Laboratory*. London: University of London Press 1969. pp.156. 20/–.

John D. Turner ist durch seine Werke über das Sprachlabor (SL) bekannt. Der vorliegende, von ihm zusammengestellte Sammelband behandelt Laborprobleme aus der Sicht des Grundschullehrers (Hazel Eames), des Gymnasiallehrers (J. B. Hilton), der Universität (H. M. Schaafsma, Hawaii), der Industrie (J. C. Gordon, Steel Company of Wales) sowie des berufsbezogenen Bildungswesens. Das Buch bietet einen reichen Schatz aus dem täglichen Umgang mit dem Labor erwachsener Erfahrung und umreißt darüber hinaus die Stellung des Labors im Fremdsprachenunterricht überhaupt. So gewinnt der interessierte Leser ebenso wie der Praktiker eine Fülle von Anregungen. Dabei sind alle Beiträge nicht nur sachkundig, sondern auch flüssig und anschaulich geschrieben. Im folgenden einige Stellungnahmen der Autoren zu wesentlichen Fragen der Laborarbeit:
1. Die Technik: Gefordert werden visuelle Arbeitsmöglichkeiten im Labor, Archiv- und Aufnahmeraum bei jedem Labor. Das Arbeitskopierverfahren erscheint unerläßlich. Interessant der Hinweis auf einen Remotester: Nur wenn der Schüler spricht, läuft sein Band, so daß der Lehrer beim Korrekturhören nur die Schüleraufzeichnung (ohne Stimuli) anzuhören braucht.

2. Die Organisation: Alle Autoren sind sich einig, daß für einen reibungslosen Laborbetrieb technische Hilfe und Assistenz im Labor (Laborwart) unerläßlich sind. Gewarnt wird vor starrer Laborbenützung um des Stundenplans willen. Schaafsma erläutert seine Vorstellung eines unterteilbaren Großlabors an der Universität, vorzugsweise im Rahmen eines aus der linguistischen und literarischen Abteilung auszugliedernden, mit dem Spracherwerb und seiner Erforschung befaßten Sprachzentrums.

Programmierung für das Sprachlabor: Trotz aller Hinweise auf kommerziell verfügbares Lehrmaterial wird auch hier – wie bei uns – der Mangel an Tonbandlehrstoff deutlich, angefangen mit dem systematischen audiovisuellen Sprachlehrgang bis zu Aufbau- und Spezialkursen für Fortgeschrittene. So muß der Laborlehrer auch heute noch sehr viel Zeit auf die Erstellung und Sammlung seines

Tonbandarchivs verwenden. Hervorgehoben werden die Notwendigkeit der Integrierung des Programms in den Unterricht und die relative Wertlosigkeit reinen Grammatikdrills vor allem für Kinder. Bei Drills muß sich der Verfasser im klaren sein, daß im Labor lediglich vorher erarbeitetes Sprachwissen zu automatisieren ist: *"The teacher is often tempted to compile drills that are unsuitable because they require the children to tink"*. Eames und Hilton beweisen in ihren Ausführungen, wie vielfältig und lebendig Sprachlaborunterricht sein kann und wie sehr das SL pädagogischem Lehrbuchwissen zu neuer Aktualität verholfen hat.

Arbeitsformen: Vielfältige Gestaltungsmöglichkeiten werden erörtert, und zwar erfreulicherweise nicht in trockener Aufzählung, sondern in Veranschaulichung konkreter Übungen. Die Skala reicht vom einfachen Drill bis zu Verständnisaufgaben, zur Landeskunde, zur freien Rede, zum Kurzvortrag und zur Literatur. Manche der aufgezeigten Möglichkeiten dürften allerdings kaum echte Laborpraxis widerspiegeln. Auch Prüfungsverfahren kommen zur Sprache, so wenn Gordon die Abnahme von Prüfungen ohne Anwesenheit des Prüfers schildert. Erwähnenswert ist auch die kommentierende Lehrerverbesserung durch Überspielen des Schülertextes auf ein Zweitgerät im Regiepult und Einschub der Korrektur.

Schülerarbeit: Im Einklang mit meinen Erfahrungen ist man sich einig, daß die Selbstkorrektur des Lernenden im Labor ein Kardinalproblem bildet, zumal gerade im akustischen Bereich Fehlerwahrnehmung noch keineswegs Fähigkeit zur Fehlerverbesserung bedeutet. Deshalb sollen die Schüler möglichst früh zur Selbstkritik erzogen werden. Vor allem aber sollten die Programme fehlerhafte Schülerreaktionen weitgehend ausschalten. In der Regel ist es bei Drillübungen auch nicht nötig, daß der Schüler seine Bearbeitung anhört, denn diese Zeit kann er nützlicher für einen zweiten Durchgang des Bandes verwenden. Selbst aus der Sicht des Universitätslehrers meint Schaafsma: *"Extensive student recording as an aspect to drill has more drawbacks than advantages"*.

Aus den Erfahrungsberichten des Buches geht deutlich hervor, daß das SL zu einem unerläßlichen Bestandteil modernen Fremdsprachunterrichts geworden ist. Dem Lehrenden allerdings bringt es weniger Erleichterung als vielmehr zusätzliche Arbeit und Verantwortung. Wenn er es nicht geschickt und voll in seinen Unterricht eingliedert, entartet es zum sinnlosen Selbstzweck. Aufgabe des Labors ist es, den Unterricht zu intensivieren, "Altes mit neuen Mitteln besser zu tun".

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The author of some 50 books, mostly research monographs. Has written on adolescence, ability and environment, the differentiation problem in the comprehensive school, studies on student achievement and school organisation, curriculum and teaching and social factors; on comparative education; a 30 year follow-up of educational and vocational careers; twin research, etc.

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